M67001.AR.004731
MCB CAMP LEJEUNE
5090.3a

FINAL EXPANDED SUPPLEMENTAL REMEDIAL INVESTIGATION SITE 86 OPERABLE UNIT NUMBER 20 (OU20) MCB CAMP LEJEUNE NC

2/1/2011

CH2M HILL

Final

Expanded Supplemental Remedial Investigation
Site 86—Operable Unit No. 20

Marine Corps Base Camp Lejeune
Jacksonville, North Carolina

Contract Task Order 081

February 2011

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Under the

NAVFAC CLEAN 1000 Program
Contract N62470-08-D-1000

Prepared by

CH2MHILL

Charlotte, North Carolina

NORTH CAROLINA LICENSED SEAL 2150 GEOLOGIST THERON C. CRIM

Executive Summary

Introduction

This Expanded Supplemental Remedial Investigation (ESRI) Report summarizes previous investigations and presents the field activities, data, results, and conclusions of environmental investigation activities conducted by CH2M HILL between 2006 and 2010 at Operable Unit (OU) No. 20, Site 86 at Marine Corps Base Camp Lejeune (MCB CamLej), located in Onslow County, North Carolina.

The first site-wide Remedial Investigation (RI) was conducted between 1995 and 1998 to evaluate the nature, extent, and significance of the groundwater contaminant plume identified during the North Carolina Department of Environment and Natural Resources (NCDENR) Underground Storage Tank (UST) Site Assessment (SA) activities. Based on regulatory review, an Amended RI was conducted between 2001 and 2003 to assess the western, upgradient portion of a groundwater contaminant plume. In addition, several supplemental site investigations were conducted to further characterize the extent of site impacts.

Following submittal of the RI, Amended RI, and supplemental site investigations, CH2M HILL, the United States Environmental Protection Agency (USEPA), and the NCDENR determined that the vertical and horizontal extent of site contamination was not fully defined and available data were insufficient to support a Feasibility Study (FS).

The purpose of this ESRI is to: 1) present a complete history of the investigation activities completed at the site, 2) collect information to assess the environmental setting at the site, 3) characterize the sources of environmental contamination, 4) evaluate the physical and chemical properties of the site contaminants, 5) assess the nature and extent of the site contaminants, and 6) evaluate the environmental risk posed by the site contaminants.

Site 86 Use

MCB CamLej encompasses approximately 236 square miles of land in Onslow County, North Carolina, adjacent to the southern side of the City of Jacksonville. The Base is bordered by the Atlantic Ocean to the east, U.S. Route 17 to the west, and State Route 24 to the north, and is bisected by the New River, which flows into the Atlantic Ocean in a southeasterly direction **(Figure 2-1)**. Jacksonville is the largest city near MCB CamLej and contains approximately half of the county's total population. The areas adjacent to the Base are generally rural.

Historically, the extent of Site 86, formerly the Aboveground Storage Tank Area, was defined as the southwest corner of the intersection of Foster and Campbell Streets (**Figure 2-3**). The original area of Site 86 served as a storage area for petroleum products between 1954 and 1988. In 1954, three 25,000-gallon aboveground storage tanks (ASTs) were installed within an earthen berm and a small pump house was constructed to transfer fuel oil to and from the ASTs. The three tanks were reportedly used for fuel oil storage until 1974. Between

1979 and 1988, the ASTs were used for temporary storage of used oil. In 1988, the ASTs were emptied, cleaned, and subsequently removed in 1992.

Based on the results of a Solid Waste Management Units (SWMUs) 303 and 318 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), the boundaries of Site 86 were expanded in August 2006 to include a Helicopter Wash Rack (Building AS513) (known as the "Bird Bath"), several hangars, SWMUs 303 and 318, a gas station and garage (Building 410), and Building AS510.

The former Helicopter Wash Rack was located east of Hangar AS515 on the edge of the flight line and was reportedly used for washing aircraft prior to the installation of a new wash rack in 1968. The use of the new wash rack was discontinued and the area was excavated in 2005. The Bird Bath sprayed water through a series of nozzles embedded within the tarmac to clean the aircraft. The Bird Bath was abandoned in 2001. SWMUs 303 and 318 are located east of Bancroft Street and adjacent to the former Helicopter Wash Rack. SWMU 303 consists of two former steel ASTs that were contained within a concrete, bermed structure, and SWMU 318 is the former concrete, multi-chambered oil/water separator (OWS) and grit chamber associated with the former Helicopter Wash Rack. The hangars house a carburetor shop, a battery shop, a paint shop, and an engine build-up shop and are used for aircraft maintenance activities. Historically, three separate buildings were located within the footprint of Building AS510. These buildings were used for various purposes, including a parking area for tank trucks, a steam power plant, a battery shop, waste storage, a parachute loft, and a parking area for military and civilian personnel. The three buildings were demolished, and Building AS510 was constructed in 1994 as a training facility.

The primary constituents at Site 86 are the chlorinated solvent compounds trichloroethene (TCE) and its daughter products of reductive dechlorination, including cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC) in groundwater. The current site boundary reflects the extent of contamination (**Figure 2-3**).

Site Physical Characteristics

Site 86 lies within an area of low topographic relief adjacent to the New River. The majority of the site is developed with aircraft hangars, aircraft support buildings, or concrete/asphalt paved areas. A large open area, known as the northeast grass area, is present in the eastern portion of the site. In general, storm water drains east and southeast through storm drains which discharge to a drainage ditch east of the flight line near the new flight line tower or west to the storm water retention pond located in the western portion of the site (**Figure 2-3)**.

The site is underlain by marine and non-marine sediments ranging from early Cretaceous to Holocene. Within the vicinity of Site 86, the uppermost sediments belong to the undifferentiated Formation and consist of fine-to-medium grained sands with lesser amounts of silt and clay, extending to depths of 0 to 35 feet below ground surface (bgs).

The River Bend Formation underlies the undifferentiated Formation and is composed of sand, silt, shell and fossil fragments, and trace amounts of clay. The amount of shell fragments decreases with depth to approximately 55 to 65 feet bgs, where a greenish gray to olive green silty sand is present. Below this layer, the composition of the River Bend

Formation changes to a fine-to-medium grained sand with trace amounts of silts and shell fragments. The River Bend Formation overlies the Castle Hayne Formation, which was not encountered at Site 86.

In general, groundwater flow direction within the surficial and Castle Hayne aquifers is to the east with a slight northeast component in the eastern portion of the site. Downward vertical gradients were calculated between the surficial and Castle Hayne aquifers. Based on in situ aquifer testing, the following hydraulic conductivity values were estimated: in the surficial aquifer 2.8 feet per day (ft/day) to 40 ft/day, with a geometric mean of 6.95 ft/day; in the upper Castle Hayne aquifer, 1.26 ft/day to 28 ft/day, with a geometric mean of 3.15 ft/day; and in the middle Castle Hayne aquifer, 0.06 ft/day to 3 ft/day, with a geometric mean of 0.45 ft/day.

Potable water for MCB CamLej and the surrounding residential area is provided by public water supply wells that pump groundwater from the Castle Hayne aquifer. Although freshwater is present within the surficial, Castle Hayne, Beaufort, and Peedee aquifers, all of which are located below MCB CamLej, only the Castle Hayne aquifer is used by MCB CamLej as a water supply source.

Nature and Extent of Contamination

Surface and Subsurface Soil

SVOCs, pesticides, and metals are present in surface soil at concentrations that exceed the applicable soil screening levels. The magnitude of the SVOCs and pesticides exceedances is generally low, and their occurrence and distribution appear to be related to the industrial nature of the site. The metals appear to be widespread and at concentrations that are generally consistent with naturally occurring levels.

Metals and pesticides are present in the subsurface soil at concentrations that exceed the regulatory screening levels. Their occurrence and distribution appear to be consistent with the surface soil impacts noted above. Additionally, pesticide impacts are limited to one subsurface soil sample location. Limited petroleum-related VOC impacts are present within the former UST tank basins at the UST-AS410N, UST-AS410S, and UST–AS510 sites.

Groundwater

The primary constituents detected in groundwater at concentrations exceeding the applicable North Carolina Groundwater Quality Standards (NCGWQS) are the chlorinated solvent compounds TCE and its daughter products of reductive dechlorination, including cis-1,2-DCE and VC.

Other constituents detected above applicable NCGWQS include the VOCs tetrachloroethene (PCE), benzene, methyl-tert-butyl ether [MTBE], and 1,1-DCE; the SVOCs benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and the metals chromium and iron.

Based on the analytical data, the distribution and relatively low concentrations of benzene appear to be consistent with historical releases from several UST sites. Additionally, the relatively low concentrations of SVOCs are localized and near the NCGWQS. Also, concentrations of iron and chromium appear to be, in general, related to naturally occurring

levels of these metals, as there is no specific source for iron or chromium contamination at Site 86.

Within the surficial aquifer, chlorinated VOCs appear as three large, diffuse plumes **(Figures 5-5** through **Figure 5-7)**. The easternmost plume, located near Building AS515/SWMU303-318, extends approximately 700 feet between monitoring wells IR86-MW40 and IR86-MW41 on the industrial/flight line portion of the site. The central plume, located near the original Site 86 RI boundaries, extends approximately 630 feet between monitoring well IR86-MW-10IW and monitoring well IR86-MW47. The easternmost plume, located near the drainage ditch on the eastern portion of the flight line, extends approximately 1,645 feet between monitoring wells IR86-MW58 and IR86-MW63. As shown on the figures, the horizontal extents of TCE, cis-1,2-DCE, and VC impacts in the surficial aquifer have been delineated to their respective NCGWQS.

Within the upper Castle Hayne aquifer, chlorinated VOCs appear as three large, diffuse plumes (**Figures 5-8** through **5-10),** similar to those observed in the surficial aquifer, with slight differences in orientation and generally higher levels of chlorinated VOCs. The westernmost plume, located near Building AS515/SWMU303-318, extends approximately 950 feet east from Building AS545 to Building AS541 over the industrial portion of the site. The northernmost plume, located near the original Site 86 RI boundaries, extends approximately 1925 feet to the northeast from Building AS510 to monitoring well IR86-MW-34IW. The easternmost plume, located near the drainage ditch toward the eastern portion of the flight line, extends approximately 1,470 feet east from IR86-MW22IW into the northeast grass area. As shown on the figures, the horizontal extents of TCE, cis-1,2-DCE, and VC impacts in the upper Castle Hayne aquifer have been delineated to their respective NCGWQS.

Based on the data presented above, the horizontal extents of TCE, cis-1,2-DCE, and VC in the middle Castle Hayne aquifer have been delineated to their respective NCGWQS. The detected concentration of PCE from IR86-MW19DW appears to be localized and is not indicative of a new release. The detected concentrations of SVOCs appear to be localized and are within 0.5 microgram per liter (µg/L) of their respective NCGWQS.

The cross sectional views of the Site 86 groundwater plumes, as shown on **Figures 5-11** through **5-13**, indicate that the vertical extents of TCE, cis-1,2-DCE, and VC have been delineated to their respective NCGWQS.

Surface Water

No volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), or metals were detected above regulatory screening levels in western storm water retention pond samples.

However, SVOCs, pesticides, and metals were detected above the applicable regulatory screening levels in the drainage ditch. The extent of surface water contamination is confined to the drainage ditch and does not appear to go beyond sample location IR86-SW110, where SVOCs and metals were detected at the highest frequency at concentrations exceeding regulatory levels (**Figure 5-1**).

Sediment

SVOCs, metals, and one pesticide are present in both the western storm water retention pond and the drainage ditch at concentrations that exceed soil screening levels. The extent of impacted sediment is confined to the storm water retention pond and ditch. Within the drainage ditch, sediment impacts extend to the furthest downgradient sample location (IR86-SD113).

The magnitude of the SVOC and pesticide exceedances in the surface water and sediment is generally low and their occurrence and distribution appear to be related to the industrial nature of the site. The metals appear to be widespread and at concentrations that are generally consistent with naturally occurring levels.

Fate and Transport

Source Areas

SVOCs, pesticides, and metals were detected in sediment, surface soil, subsurface soil, and surface water collected from the industrial, flight line, and common areas at Site 86 (**Figure 5-1** through **5-3);** however, their concentrations are not indicative of a single historical or ongoing release. Rather, they appear to be associated with naturally occurring levels (in the case of metals) or the sitewide land application of pesticides and other chemicals.

Based on the chemical and physical data collected during the ESRI activities, the chlorinated VOCs detected in the three groundwater plumes are likely a result of the following:

- Western plume--likely originated near SWMU 303/318 from multiple surficial releases associated with historical aircraft maintenance activities (AS 515) and former Helicopter Wash Rack, Building AS513.
- Central plume--likely originated near Building AS510 from several surficial releases associated with historical aircraft maintenance activities.
- Eastern plume--likely associated with an open, unlined drainage ditch that is a release point for a majority of the surface water runoff collected by the site's stormwater conveyance network.

Contaminant Transport

Surface water, sediment, and soil contaminants at Site 86 are generally immobile (unless physically transported by storms or anthropogenic processes), and are not necessarily related to contaminated groundwater. Based on the physical and chemical properties of the contaminants detected in these media, they are not expected to migrate to any receptors and will likely degrade in situ.

Groundwater flow through the surficial aquifer upgradient of the Site 86 source areas is generally to the east toward the New River. Similarly, groundwater flow through the Castle Hayne aquifer is generally to the east toward the New River. Historically, petroleum hydrocarbon constituents have been detected in the upgradient groundwater. The likely source of the petroleum contamination in the upgradient groundwater is the Campbell Street Fuel Farm, which has had several documented releases to the groundwater. Low levels of benzene in samples collected from monitoring well IR86-52 were detected in the

2009/2010 groundwater monitoring event and may be related to the upgradient groundwater.

Vertical migration of VOCs is occurring at Site 86, as evidenced by the distribution of VOCs throughout the surficial and upper Castle Hayne aquifers, and is supported by the presence of downward vertical gradients between the two aquifers. As noted in Section 5, VOCs have been detected at concentrations above NCGWQS in groundwater samples collected from monitoring wells screened in both aquifers.

The New River is located downgradient of the eastern boundary of Site 86 and is the ultimate receptor for surface water and groundwater discharged from the site. During the ESRI field activities, several downgradient monitoring wells were installed in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers to define the lateral extent of contamination. Based on the analytical data, VOCs were not detected above the NCGWQS in the downgradient monitoring wells.

Groundwater Predictive Modeling

The groundwater transport model, generated as part of the ESRI, suggests that the VOC plumes will migrate toward the New River. The simulated chemographs presented on **Appendix J-Figures 5-4** and **5-5** indicate that concentrations of TCE and VC in groundwater near the New River are within 1 µg/L of their respective NCGWQS. This trend suggests that TCE and VC could reach the New River at detectable concentrations as a result of the existing plumes beneath Site 86, even without continuing sources. However, these concentrations have been predicted to be below the Human Health NCSWQS of 30 µg/L and 2.4 µg/L, respectively.

Human Health Risk Assessment

The Human Health Risk Assessment (HHRA) was conducted to evaluate the potential human health risks associated with current and hypothetical future receptors. The current and future receptors evaluated were current/future military personnel, current maintenance workers, current/future trespassers, future residents, and future construction/industrial workers. The exposure scenarios evaluated included exposure to surface soil, surface water, and sediment for current receptors; and exposure to surface soil, groundwater, surface water, and sediment for future receptors. The potential for vapor intrusion was also evaluated to assess buildings located within 100 feet of groundwater impacts exceeding site-specific vapor intrusion screening levels. These evaluations were used to assess if VI is a current exposure pathway, and if further actions are needed at Site 86 to sufficiently protect human health.

Potential cancer and non-cancer risks were calculated based on reasonable maximum exposure (RME) and CTE (central tendency exposure) exposure point concentrations (EPCs). The RME assumes the highest level (maximum concentration) of human exposure that could reasonably be expected to occur, whereas the CTE reflects a more realistic human exposure to levels (average concentrations) across the site. Potential unacceptable risks are based on a conservative estimate of the potential cancer risk or the potential to cause other health effects not related to cancer (non-cancer hazard, or Hazard Index [HI]). For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} (a 1 in

10,000 chance of developing cancer) and 10^{-6} (a 1 in 1,000,000 chance of developing cancer) using information on the relationship between dose and response. A non-cancer hazard of 1.0 is used as an upper limit to which calculated HI values are compared. Any HI exceeding 1.0 indicates an existing non-cancer hazard.

The major conclusion of the HHRA was that current site use and site-related impacts do not pose an unacceptable risk to human health. The non-carcinogenic hazards and carcinogenic risks based on contact with surface soil, surface water, and sediment were below or within USEPA target levels. Additionally, an evaluation of the potential vapor intrusion (VI) pathway at Site 86 concluded that VI is not a current or future exposure pathway of concern.

However, potential future contact with surface soils within the flight line area by hypothetical future residents may result in risks or hazards above USEPA's acceptable risk range and hazard levels. The Constituents of Concern (COC) contributing to the elevated risk in surface soil is chromium. Additionally, potential future contact with surficial and Castle Hayne aquifer groundwater by hypothetical future residents and industrial workers may result in risk or hazards above USEPA's acceptable risk range and hazard levels. The COCs contributing to the elevated risk in groundwater are four chlorinated VOCs (PCE, TCE, cis-1,2-DCE, and VC), benzene, chromium, and four polynuclear aromatic hydrocarbons (PAHs): benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene).

Ecological Risk Assessment

The Ecological Risk Assessment (ERA) was completed to evaluate whether past site operations have adversely affected terrestrial and aquatic communities on or adjacent to Site 86. Soil, surface water, groundwater, and sediment samples were compared to published values for toxicity in various aquatic and terrestrial species. The point of exposure included species living in, or coming into contact with, contaminated media or bioaccumulation from consumption of smaller organisms, because bioaccumulation was considered likely to occur at Site 86.

The risk characterization evaluates the potential for decreases in the aquatic and terrestrial populations from contaminants identified at the site. The Hazard Quotient (HQ) and weight of evidence (WOE) approaches were used to characterize the risk to aquatic receptors from exposure to surface water, sediments, and groundwater which may discharge to surface water and to terrestrial receptors from exposure to surface soil, surface water, and biota. An HQ greater than 1.0 indicates a significant potential risk. The HQ equation is dependent on exposure concentration, chronic daily intake screening values, and terrestrial reference values.

Overall, the ERA concluded that no unacceptable risks to ecological receptors are present at Site 86. HQs were generally low for most receptors under most exposure scenarios. Specifically, no soil or surface water analytes are considered to pose a risk to ecological receptors. While some analytes in sediment (PAHs and pesticides) and potential groundwater discharge to surface water (silver) may pose an isolated risk to certain ecological receptors, the overall risk is to ecological receptors is considered acceptable.

Conclusions and Recommendations

The Expanded RI has sufficiently defined the nature and extent of contamination and potential risks to human health and ecological risk at Site 86, as shown in **Figure 2-4**. Based on the results of the ESRI, the following conclusions and recommendations have been identified for each media.

Surficial and Upper Castle Hayne Aquifer Groundwater

- Chlorinated VOCs (TCE, cis-1,2-DCE, and VC) and benzene are the primary contaminants.
- Benzo(b)fluoranthene impacts are limited to samples collected from one surficial and upper Castle Hayne aquifer monitoring well pair located in the northeast grass area.
- Benzene impacts appear to be consistent with historical releases from several UST sites at Site 86 and concentrations are near the NCGWQS.
- The horizontal extents of impacts in the surficial and upper Castle Hayne aquifer have been delineated to their respective NCGWQS.
- Risks identified to human populations include the hypothetical future child, adult, and lifetime residential ingestion of PCE, TCE, cis-1,2-DCE, and VC in groundwater.
- Groundwater modeling predicts TCE and VC will discharge into New River at or within 1 µg/L of their respective NCGWQS. However, these concentrations have been predicted to be below the applicable Human Health NCSWQS.

Middle Castle Hayne Aquifer Groundwater

- PCE impacts are limited to the sample collected from monitoring well IR86-MW19DW.
- PAH and chromium impacts are limited to the sample collected from monitoring well IR86-MW59DW.
- Groundwater impacts are vertically delineated with the exception of the PCE, PAHs, and chromium detected in two isolated samples collected from the middle Castle Hayne aquifer. These impacts do not appear to be vertically or laterally extensive.
- Risks identified to human populations include the hypothetical future child, adult, and lifetime residential ingestion of PCE, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene) and chromium in groundwater.

Surface Soil

- SVOCs, pesticides, and metals are present at concentrations that exceed applicable soil screening levels.
- SVOC and pesticide exceedances are generally low in magnitude and their occurrence and distribution appear to be related to the industrial nature of the site.
- Arsenic, chromium, and manganese appear to be widespread in distribution and are present at concentrations that are generally consistent with naturally occurring levels.

- The only risk identified to human or ecological populations is the hypothetical future residential exposure to chromium in the surface soils located within the northeast grass area of the flight line.

Subsurface Soil

- VOCs, metals, and one pesticide are present at concentrations that exceed applicable soil screening levels.
- VOC exceedances are related to several former UST sites located within the Site 86 boundary.
- Pesticide impacts are limited to one subsurface soil location.
- SVOC exceedances are generally low in magnitude and their occurrence and distribution appear to be related to the industrial nature of the site.
- Arsenic, chromium, and manganese appear to be widespread in distribution and are present at concentrations that are generally consistent with naturally occurring levels.
- No unacceptable risks to human or ecological populations, for any of the potential exposure scenarios, were identified during the risk assessments.

Surface Water and Sediment

- SVOCs, pesticides, and metals were detected above screening criteria.
- The magnitude of the exceedances is generally low and their occurrence and distribution appear to be related to the industrial nature of the site.
- No unacceptable risks to human or ecological populations, for any of the potential exposure scenarios, were identified during the risk assessments.

Recommendations

Based on the results and conclusions of the ESRI performed at Site 86, a Feasibility Study is recommended. The Feasibility Study will identify remedial action objectives; identify potential treatment, resource recovery, and containment technologies that will satisfy these objectives; screen the technologies based on their effectiveness, implementability, and cost; assemble the technologies into treatment alternatives; and analyze the alternatives against evaluation criteria.

Contents

Executive Summary ..... **iii**

Acronyms and Abbreviations ..... **xix**

Introduction **1-1**
1.1 Objectives and Approach 1-2
1.2 Report Organization 1-2

Background **2-1**
2.1 Facility-wide Demography and Land Use 2-1
2.2 Site Setting 2-1
2.3 Site History 2-2
2.3.1 Site 86/UST-AS419-21 2-2
2.3.2 Site 86 Expansion 2006 2-2
2.3.3 Site 86 Expansion 2010 2-4
2.4 Previous Investigations 2-4
2.4.1 Preliminary Site Investigation (1990) 2-5
2.4.2 Site Assessment (1992) 2-5
2.4.3 Remedial Investigation (1996) 2-6
2.4.4 Post-Remedial Investigation Activities (1997–1998) 2-7
2.4.5 Amended Remedial Investigation (2001–2002) 2-8
2.4.6 Long-term Monitoring (1998–2004) 2-9
2.4.7 Phase II SWMU Confirmatory Sampling (2005) 2-10
2.4.8 SWMU 303/318 RCRA Facilities Investigation (CH2M HILL, 2006a) 2-10
2.4.9 Interim Measure (Shaw, 2006) 2-12
2.4.10 Technology Evaluation (2003) and Air/Ozone Sparging Pilot Study (2006) 2-13
2.4.11 UST AS410N 2-13
2.4.12 UST AS410S 2-14
2.4.13 UST AS428 2-15
2.4.14 UST AS510 2-15
2.5 Results of Previous Investigations 2-16
2.5.1 Soil 2-16
2.5.2 Groundwater 2-16
2.5.3 Human Health Risk Assessment 2-18
2.5.4 Ecological Risk Assessment 2-18
2.6 Data Gaps from Previous Investigations 2-18

Expanded Supplemental Remedial Investigation Field Activities **3-1**
3.1 Assessment Strategy 3-1
3.1.1 Baseline Investigation 3-1
3.1.2 Supplemental Remedial Investigation 3-1
3.1.3 Expanded Supplemental Remedial Investigation 3-3
3.2 Sampling Methodology 3-3
3.2.1 Utility Clearance 3-4

3.2.2 Passive Soil Gas Screening Survey ... 3-4
3.2.3 DPT Groundwater Sampling ... 3-4
3.2.4 Monitoring Well Installation ... 3-5
3.2.5 Monitoring Well Development ... 3-6
3.2.6 Groundwater Sampling ... 3-6
3.2.7 Surface Soil Sampling ... 3-7
3.2.8 Subsurface Soil Sampling ... 3-7
3.2.9 Surface Water Sampling ... 3-8
3.2.10 Sediment Sampling ... 3-8
3.2.11 Aquifer Testing ... 3-8
3.2.12 Decontamination ... 3-10
3.2.13 IDW Management ... 3-10
3.2.14 Site Survey ... 3-10

Site Physical Characteristics ... 4-1
4.1 Regional and Facility-wide Physiography, Climate, and Surface Water Hydrology ... 4-1
4.2 Site 86 Topography, Drainage, and Surface Features ... 4-1
4.3 Geology and Hydrogeology ... 4-2
4.3.1 General Regional Geologic and Hydrogeologic Framework ... 4-2
4.3.2 Site-Specific Geologic and Hydrogeologic Framework ... 4-2
4.3.3 Regional Water Usage ... 4-5

Nature and Extent of Contamination ... 5-1
5.1 Data Presentation and Evaluation ... 5-1
5.1.1 Data Presentation ... 5-1
5.1.2 Regulatory Comparison Criteria ... 5-1
5.1.3 Comparison to Background Concentrations ... 5-3
5.2 Site 86 SRI Sampling Results ... 5-3
5.2.1 Surface Water ... 5-3
5.2.2 Sediment ... 5-4
5.2.3 Surface Soil ... 5-6
5.2.4 Subsurface Soil ... 5-7
5.2.5 Groundwater—Surficial Aquifer ... 5-9
5.2.6 Groundwater—Upper Castle Hayne Aquifer ... 5-9
5.2.7 Groundwater—Middle Castle Hayne Aquifer ... 5-10
5.2.8 Natural Attenuation Indicator and Other Geochemical Parameters ... 5-11

Contaminant Fate and Transport ... 6-1
6.1 Contaminant Mobility and Persistence ... 6-1
6.1.1 Contaminant Groups ... 6-1
6.1.2 Physical and Chemical Properties of Representative Compounds ... 6-1
6.1.3 Physical Properties of the Aquifer ... 6-5
6.2 Contaminant Migration ... 6-6
6.2.1 Source Areas ... 6-6
6.2.2 Releases from Soil to the Atmosphere ... 6-7
6.2.3 Releases from Soil to Groundwater ... 6-7
6.2.4 Migration of Contaminants in Groundwater ... 6-7
6.3 Solute Transport Modeling ... 6-7

6.3.1 Model Development and Calibration 6-8

Human Health Risk Assessment 7-1
7.1 Review of 2003 Amended Remedial Investigation 7-1
7.2 Updated Baseline Human Health Risk Assessment 7-3
7.2.1 Conceptual Site Model 7-3
7.2.2 Scope of Risk Assessment 7-4
7.2.3 Identification of COPCs 7-5
7.2.4 Exposure Assessment 7-9
7.2.5 Toxicity Assessment 7-14
7.2.6 Risk Characterization 7-15
7.2.7 Vapor Intrusion Evaluation 7-20
7.2.8 Uncertainty Associated with Human Health Assessment 7-23
7.3 Human Health Risk Summary 7-25

Ecological Risk Assessment 8-1
8.1 Introduction 8-1
8.2 Review of 2003 Amended RI 8-1
8.3 Step 1—Preliminary Problem Formulation and Ecological Effects Evaluation 8-1
8.3.1 Problem Formulation 8-1
8.3.2 Ecological Effects Evaluation 8-5
8.4 Step 2—Preliminary Exposure Estimate and Risk Calculation 8-5
8.5 Step 3—Refinement of Conservative Exposure Assumptions 8-7
8.5.1 Surface Soil 8-8
8.5.2 Subsurface Soil 8-9
8.5.3 Surface Water (Western Pond) 8-9
8.5.4 Surface Water (Drainage Ditch) 8-10
8.5.5 Groundwater 8-10
8.5.6 Sediment (Western Pond) 8-11
8.5.7 Sediment (Drainage Ditch) 8-12
8.5.8 Risk from Food Chain Transfer 8-14
8.6 Exposure Assessment 8-15
8.6.1 Exposure Point Concentrations 8-15
8.6.2 Uncertainty 8-17
8.6.3 Conclusions 8-19

Conclusions and Recommendations 9-1
9.1 Conclusions 9-1
9.1.1 Nature and Extent of Contamination 9-1
9.1.2 Fate and Transport 9-2
9.1.3 Human Health Risk Assessment 9-3
9.1.4 Ecological Risk Assessment 9-3
9.2 Recommendations 9-3

References 10-1

Appendixes

A Historical Analytical Data

B Boring Logs and Well Construction Diagrams
C Groundwater Sampling Sheets and Monitoring Well Purge Forms
D Slug Test and Pump Test Data
E SRI Data
F Laboratory Reports (2006-2008)
G Laboratory Reports (2009–2010)
H Human Health Risk Assessment
I Basewide Background Data
J MODFLOW Modeling

Tables

2-1 Summary of Parameters Analyzed during Previous Investigations
2-2 Summary of Previous Investigations

3-1 Summary of Monitoring Well Construction Details
3-2 Laboratory Analytical Methods - Baseline Groundwater Investigation
3-3 Laboratory Analytical Methods - Soil Gas Investigation
3-4 Laboratory Analytical Methods - Supplemental Remedial Groundwater Investigation
3-5 Laboratory Analytical Methods - Sediment
3-6 Laboratory Analytical Methods - Surface Water
3-7 Laboratory Analytical Methods - Surface Soil
3-8 Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
3-9 Laboratory Analytical Methods - Subsurface Soil
3-10 Summary of Groundwater Quality Parameters – Surficial Aquifer (December 2009 and January 2010)
3-11 Summary of Groundwater Quality Parameters – Upper Castle Hayne Aquifer (December 2009 and January 2010)
3-12 Summary of Groundwater Quality Parameters – Middle Castle Hayne Aquifer (December 2009 and January 2010)

4-1 Geologic Hydrostratigraphic Units of the Inner Coastal Plain
4-2 Summary of Groundwater Elevations in April 2010
4-3 Vertical Hydraulic Gradient Calculations - March 2010

5-1 Surface Water Analytical Data
5-2 Sediment Analytical Data
5-3 Surface Soil Analytical Data
5-4 Subsurface Soil Analytical Data
5-5 Surficial Groundwater Analytical Data
5-6 Upper Castle Hayne Groundwater Analytical Data
5-7 Middle Castle Hayne Groundwater Analytical Data
5-8 Summary of Natural Attenuation Indicator Parameters – Surficial Aquifer
5-9 Summary of Natural Attenuation Indicator Parameters – Upper Castle Hayne Aquifer
5-10 Summary of Natural Attenuation Indicator Parameters – Middle Castle Hayne Aquifer

6-1 Physical, Chemical, and Half-Life Data of COCs
6-2 Soil Retardation Coefficients for Representative Chemicals

7-1 Samples Used in the Risk Assessment
7-2 Summary of COPCs
7-3 Potentially Complete Human Health Exposure Pathways
7-4 Summary of RME Cancer Risks and Hazard Indices
7-5 Summary of CTE Cancer Risks and Hazard Indices
7-6 Comparison of Historical Data Included in the Basewide Vapor Intrusion Evaluation and Expanded Supplemental RI Groundwater Data

Figures

2-1 Previous Investigation Timeline
2-2 Site Location Map
2-3 Site Boundaries
2-4 Conceptual Site Model
2-5 Previous Investigations

3-1 ESRI Timeline
3-2 Monitoring Well Locations
3-3 Passive Soil Gas Locations Study
3-4 DPT Groundwater Sample Locations
3-5 Surface Water, Sediment, and Soil Sample Locations

4-1 Physiographic Provinces of Eastern North Carolina
4-2 Site 86 Hydrologic Features
4-3 Geologic Cross Section Location Map
4-4 Geological Cross-Section A-A′
4-5 Geological Cross-Section B-B′
4-6 Potentiometric Surface - Surficial Aquifer
4-7 Potentiometric Surface - Upper Castle Hayne Aquifer
4-8 Potentiometric Surface - Middle Castle Hayne Aquifer
4-9 Public Water Supply Wells

5-1 Surface Water Exceedances
5-2 Sediment Exceedances
5-3 Surface Soil Exceedances
5-4 Subsurface Soil Exceedances
5-5 TCE Concentrations in the Surficial Aquifer
5-6 cis-1,2-DCE Concentrations in the Surficial Aquifer
5-7 VC Concentrations in the Surficial Aquifer
5-8 TCE Concentrations in the Upper Castle Hayne Aquifer
5-9 cis-1,2-DCE Concentrations in the Upper Castle Hayne Aquifer
5-10 VC Concentrations in the Surficial Aquifer
5-11 Cross Sectional View of TCE Distribution (A-A′)
5-12 Cross Sectional View of cis-1,2-DCE Distribution (A-A′)
5-13 Cross Sectional View of VC Distribution (A-A′)

6-1 Degradation Pathway of TCE

7-1 HHRA Conceptual Site Model

8-1 Conceptual Site Model of Ecological Exposures at Site 86

Acronyms and Abbreviations

ADAF	age-dependent adjustment factor
AF	adherence factor
AFVR	aggressive fluid vapor recovery
AST	aboveground storage tank
AS/SVE	air sparge/soil vapor extraction
ATSDR	Agency for Toxic Substances and Disease Registry
atm-m^3/M	atmosphere-cubic meter per mole
AUF	area use factor
BAF	bioaccumulation factor
Baker	Baker Environmental, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
Cal EPA	California Environmental Protection Agency
CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action--Navy
cPAH	carcinogenic polynuclear aromatic hydrocarbon
COC	constituent of concern
COPC	constituent of potential concern
CSA	Comprehensive Site Assessment
CSF	cancer slope factor
CSI	Confirmatory Sampling Investigation
CSM	conceptual site model
CTE	central tendency exposure
CTO	Contract Task Order
CVOC	chlorinated volatile organic compound
°F	degrees Fahrenheit
days/yr	days per year
DCA	dichloroethane
DCE	dichloroethene
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DOT	Department of Transportation
DQO	data quality objective
DRO	diesel range organics
DPT	direct-push technology

EcoSSL	ecological soil screening level
ELCR	excess lifetime carcinogenic risk
ERA	Ecological Risk Assessment
EPC	exposure point concentration
ESRI	Expanded Supplemental Remedial Investigation
ESV	ecological screening value
FE(II)	ferrous iron
FE(III)	ferric iron
FFA	Federal Facilities Agreement
FID	flame ionization detector
F_{oc}	fraction organic carbon
FRB	Federal Remediation Branch
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year
GFM	groundwater flow model
GI	gastrointestinal
gpm	gallons per minute
GRO	gasoline range organics
GSI	Groundwater Technology Government Services, Inc.
GWSL	groundwater screening level
HEAST	Health Effects Assessment Summary
hectare	ha
HDD	horizontal directional drilling
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
HSA	hollow stem auger
IASL	indoor air screening level
ID	inner diameter
IDW	investigation-derived waste
IUR	inhalation unit risk factor
IR	Installation Restoration
IRIS	Integrated Risk Information System
K_d	distribution coefficient
kg	kilogram
K_h	Henry's Law Constant
K_{oc}	partition coefficient
L/day	liters per day
K_{ow}	octanol-water partition coefficient
LNAPL	light non-aqueous phase liquid
LOAEL	lowest observable adverse effect level
LSA	Limited Site Assessment

LTM	long-term monitoring
LUR	land use restriction
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MATC	Maximum Acceptable Toxicant Concentration
MCAS	Marine Corps Air Station
MCB CamLej	Marine Corps Base Camp Lejeune
MCL	maximum contaminant level
MF	modifying factor
MF2K	Modflow-2000
mg/day	milligrams per day
mg/kg	milligrams per kilogram
mg/kg-day	milligrams per kilogram per day
mg/L	milligrams per liter
ml/g	milliliters per gram
MMOA	mutagenic mode of action
MNA	monitored natural attenuation
MPP	Master Project Plans
MSCC	maximum soil contaminant concentration
MTBE	methyl-tert-butyl ether
ml/g	milliliters per gram
msl	mean sea level
mV	millivolt
NAD	North American Datum
NAIP	natural attenuation indicator parameter
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NC 2B	North Carolina Surface Water Standards
NCAC	North Carolina Administrative Code
NCEA	National Center for Environmental Assessment
NC SSL	North Carolina Soil Screening Levels
NCDENR	North Carolina Department of Environment and Natural Resources
NCGWQS	North Carolina Groundwater Quality Standards
NCSWQS	North Carolina Surface Water Quality Standards
NFA	no further action
NIH	National Institutes of Health
NOAEL	no observed adverse effect level
NORR	Notice of Regulatory Requirement
NRWQC	National Recommended Water Quality Criteria
NPL	National Priorities List
OCP	organochlorine pesticide
ORNL	Oak Ridge National Laboratories
ORP	oxidation-reduction potential
OU	operable unit

OWS	oil/water separator
PAH	polynuclear aromatic hydrocarbon
PAL	Project Action Limit
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PE	polyethylene
PEC	probable effect concentration
PPRTV	provisional peer reviewed toxicity value
PRG	preliminary remediation goal
psi	pound per square inch
PSI	Preliminary Site Investigation
PVC	polyvinyl chloride
RA	risk assessment
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RfC	reference concentration
RfD	reference dose
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RME	reasonable maximum exposure
ROD	record of decision
RSL	Regional Screening Level
SA	Site Assessment
SAP	Sampling and Analysis Plan
SCS	Soil Conservation Service
SGSL	Soil Gas Screening Level
SLERA	Screening-level Ecological Risk Assessment
SOP	standard operating procedure
SQL	sample quantitation limit
SRI	Supplemental Remedial Investigation
SSL	soil screening level
STGC	Soil-to-Groundwater Concentration
STSC	Superfund Health Risk Technical Support Center
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAL	Target Analyte List
TCE	trichloroethene
TEC	threshold effect concentration
3-D	three-dimensional
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TRV	toxicity reference value

UCL	upper confidence limit
UF	uncertainty factor
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VC	vinyl chloride
VI	vapor intrusion
VOC	volatile organic compound
WHO	World Health Organization
WOE	weight of evidence

SECTION 1

Introduction

This Expanded Supplemental Remedial Investigation (ESRI) Report presents the data, results, conclusions, and recommendations for environmental investigation activities at Operable Unit (OU) 20, Site 86, at Marine Corps Base Camp Lejeune (MCB CamLej) located in Jacksonville, North Carolina. Site 86 is located within Marine Corps Air Station (MCAS) New River, a heavily industrialized flight support area of MCB CamLej. This ESRI Report was prepared under the Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic Division, Comprehensive Long-term Environmental Action—Navy (CLEAN) 1000 Contract N62470-08-D-1000, Contract Task Order (CTO) 081.

Initial investigations of the fuel farm, located at the corner of Foster and Campbell Streets, were conducted as part of the MCB CamLej Underground Storage Tank (UST) Program to evaluate environmental impacts resulting from hazardous waste storage in three 25,000-gallon aboveground storage tanks (ASTs) identified as UST-AS419, UST-AS420, and UST-AS421. The ASTs were used to store fuel oil and waste oil between 1974 and 1988. A Site Assessment (SA) conducted by O'Brien & Gere (1992) identified both petroleum constituents and chlorinated solvents at the site. As a result of the chlorinated solvent-impacted soil and groundwater, UST-AS419, -420, and -421 were transferred from the UST Program to the Installation Restoration (IR) Program in 1994 and designated as Site 86

A Remedial Investigation (RI) and subsequent Amended RI were conducted by Baker Environmental Inc. (Baker) at Site 86 between 1995 and 1998 and 2001 and 2003, respectively. In addition, a Resource Conservation and Recovery Act (RCRA) Confirmatory Sampling Investigation (CSI) and RCRA Facility Investigation (RFI) were conducted by CH2M HILL between 2002 and 2005 to investigate environmental impacts related to solid waste management units (SWMUs) 303 and 318, which consisted of a concrete oil/water separator (OWS), grit chamber, and helicopter wash pad, located south of Site 86. The results of the CSI and RFI indicated that chlorinated solvent-impacted soil and groundwater were present in the vicinity of SMWUs 303 and 318.

In 2006, the MCB CamLej Tier I Partnering Team consisting of representatives from the Department of the Navy (Navy), the United States Environmental Protection Agency (USEPA), and the North Carolina Department of Environment and Natural Resources (NCDENR) decided that, based on the presence of chlorinated solvents at SMWUs 303 and 318, the SWMUs should be incorporated into Site 86 and the Site 86 boundaries should be expanded to include all of the MCAS flight line area encompassed by the chlorinated solvent impacted groundwater. Site 86 expanded from 1.3 acres to 146 acres, resulting in the incorporation of multiple additional potential sources of contamination, including several UST sites and several sources not previously investigated. The Partnering Team agreed that there was insufficient data to support a corrective action decision. To proceed with a corrective action decision, the full vertical and horizontal extent of site contamination would need to be determined.

The investigation activities summarized in this report were conducted to further delineate the extent of contamination at Site 86 in response to the recommendations for further evaluation made in the Amended RI Report (Baker, 2003), RFI (CH2M HILL, 2006a), and Partnering Team consensus. Supplemental Remedial Investigation (SRI) activities were conducted between April 2006 and March 2010 in accordance with the RI Work Plan (CH2M HILL, 2007), MCB CamLej Tier I Partnering Team discussions, and the Sampling and Analysis Plan, Expanded Supplemental Remedial Investigation (SAP) (CH2M HILL, 2009a).

The technical approach and specific objectives of this investigation were jointly scoped by the MCB CamLej Tier I Partnering Team.

1.1 Objectives and Approach

The objectives of this ESRI were to:

- Present a complete history of the investigation activities.
- Collect information to assess the environmental setting at the site, including hydrogeology, geology, hydrology, topography, and anthropogenic factors that may affect the hydrology or contaminant pathways at the site.
- Characterize the sources of environmental contamination by collecting analytical data and evaluate the physical and chemical properties of the contaminants, including migration and dispersal characteristics.
- Assess the nature and extent of site contaminants, including their fate and transport, by collecting and analyzing surface water, sediment, soil, and groundwater samples.
- Evaluate the environmental risk posed by the site contaminants.

1.2 Report Organization

This ESRI is composed of the following sections:

- **Section 1—**Introduction
- **Section 2—**Background
- **Section 3—**ESRI Field Activities
- **Section 4—**Site Physical Characteristics
- **Section 5—**Nature and Extent of Contamination
- **Section 6—**Contaminant Fate and Transport
- **Section 7—**Human Health Risk Assessment
- **Section 8—**Ecological Risk Assessment
- **Section 9—**Conclusions and Recommendations
- **Section 10—**References

Figures and tables referenced throughout the text are provided at the end of each section.

SECTION 2

Background

MCB CamLej was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) effective November 4, 1989. Subsequent to this listing, the USEPA Region 4, NCDENR, the Navy, and the United States Marine Corps entered into a Federal Facilities Agreement (FFA) for MCB CamLej. The primary purpose of the FFA was to ensure that environmental impacts associated with past and present activities at the Base are thoroughly investigated and that appropriate CERCLA response and RCRA corrective action alternatives are developed and implemented, as necessary, to protect public health and welfare and the environment.

This section presents a summary of the site setting, history, and previous phases of investigation conducted at Site 86. **Figure 2-1** presents a timeline of the previous investigation phases performed at Site 86 from 1996 to 2006.

2.1 Facility-wide Demography and Land Use

MCB CamLej is home to active duty, dependent, retiree, and civilian populations of approximately 150,000 personnel. Approximately 47,000 military personnel are stationed at the Base, including 39,000 Marines for resident formal school training and 8,000 Marines and Department of Defense employees for job enhancement training. MCB CamLej provides housing, training facilities, logistical support, and administrative supplies for Fleet Marine Force units and other assigned units.

MCB CamLej includes the following training facilities: Camp Geiger, Camp Johnson, Stone Bay, Greater Sandy Run Training Area, and MCAS New River (**Figure 2-2**). Military training operations at the Base include 54 live-fire ranges, 89 maneuver areas, 33 gun positions, 25 tactical landing zones, and a military operation in an urban terrain training facility. In addition, the beach frontage of the Base is capable of supporting amphibious operations.

MCB CamLej is located within Onslow County, along the coastal plain of North Carolina. The Base covers more than 153,000 acres, including approximately 26,000 acres of water and 127,000 acres of terrestrial features. The Base encompasses a 92-mile perimeter, including approximately 14 miles along the Atlantic Ocean. The ocean frontage of the Base is composed of a fragile barrier island system that is separated from the mainland by salt marshes, small bays, and the Intracoastal Waterway.

2.2 Site Setting

MCB CamLej encompasses approximately 236 square miles of land in Onslow County, North Carolina, adjacent to the southern side of the City of Jacksonville. The Base is bordered by the Atlantic Ocean to the east, U.S. Route 17 to the west, and State Route 24 to the north and is bisected by the New River, which flows into the Atlantic Ocean in a southeasterly direction **(Figure 2-2)**. Jacksonville is the largest city near MCB CamLej and

contains approximately half of the county's total population. The areas adjacent to the Base are generally rural.

Site 86 is located within the MCAS New River, adjacent to Camp Geiger in the northwest portion of MCB CamLej (**Figure 2-2**). The flight line at MCAS New River has been in service since 1951. Over time, the surrounding area has been developed to provide support for aircraft and personnel. Approximately half of Site 86 is either paved or developed with buildings. The topographic relief within Site 86 is minimal, with a slight slope to the east toward the New River. In general, stormwater drains east and southeast through storm drains which discharge to a drainage ditch east of the flight line near the new flight line tower (**Figure 2-3)**.

2.3 Site History

Past environmental investigations at MCB CamLej have identified a total of 176 sites, including 85 UST sites, which contain impacted soil and/or groundwater. Assessment of the various sites has indicated that the contaminants released from past storage and disposal activities at the installation have occasionally migrated through the surface and subsurface soils to the surficial aquifer and several surface water bodies. Contaminants identified during the SAs at MCB CamLej include battery acid, fuels, paints and thinners, polychlorinated biphenyls (PCBs), pesticides, herbicides, solvents, used oils, and heavy metals (NPL Site Narrative Listing, 1995).

Investigations at Site 86 have historically focused on total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) in the subsurface in the vicinity of the former ASTs and ancillary piping. Over time, the investigations have expanded to include investigations of chlorinated solvents.

2.3.1 Site 86/UST-AS419-21

In 1954, three 25,000-gallon ASTs and a pump house were installed within an earthen bermed area located south of Campbell Street (**Figure 2-3**). The tanks reportedly contained No. 6 fuel oil until 1979 (Dolph, 2000). Thereafter, the ASTs were reportedly used to store waste oil until 1988, when the tanks were emptied and taken out of service (O'Brien & Gere, 1992). In 1992, the tanks were removed from the site (CH2M HILL, 2003).

The original site boundary was established in 1996 following the completion of an RI and encompassed the area containing the three ASTs and pump house.

2.3.2 Site 86 Expansion 2006

In August 2006, the Site 86 boundaries were expanded to include the majority of the industrial area north of the MCAS New River flight line (**Figure 2-3**). Descriptions of the buildings, structures, and features located within the expanded Site 86 boundary that may have contributed to environmental impacts identified at the site are provided below.

Helicopter Wash Rack-Building AS513

The former Helicopter Wash Rack, Building AS513, was located east of Hangar AS515, on the edge of the flight line (**Figure 2-4**). This area was reportedly used for washing aircraft during the 1950s and 1960s, until construction of a new wash rack in 1968. Wastewater from

aircraft washing activities reportedly drained onto unpaved areas to the east of the flight line. There is no documentation that solvents were used in the washing activities; however, solvents were identified in the soils in this area during the RFI discussed in Section 2.4.8. A replacement Helicopter Wash Rack eliminated the surface discharge, using two drains and associated piping to transfer wastewater to an OWS. The use of the replacement wash rack was discontinued and the area was excavated in 2005, as discussed in Section 2.4.8. The area formerly occupied by the Helicopter Wash Rack, Building AS513, is currently undeveloped.

A second aircraft washing area (referred to as the "Bird Bath"), located immediately southeast of Building AS513, utilized water sprayed through a series of nozzles embedded within the tarmac to clean the aircraft. Wash water drained into storm drains located on the flight line. The "Bird Bath" was installed in 1967 and operated until the late 1990s, when maintenance problems left the system inoperable. The Bird Bath was subsequently removed in 2001.

SWMU 303 and SWMU 318

SWMUs 303 and 318 are located adjacent to the former Helicopter Wash Rack (Building AS513) (**Figure 2-4**). SWMU 303 consists of a concrete bermed area that previously contained two steel ASTs. The ASTs were installed in 1983 and labeled as "Hydraulic Fluid, Engine and Transmission Oils Only, No Solvents or Other Chemicals." The tanks were taken out of service in 2005.

SWMU 318 is a former concrete, multi-chambered OWS and grit chamber associated with the former Helicopter Wash Rack. The primary functions of SWMU 318 were to collect water, soap, oil, grease, and dirt from the wash rack; separate the solids from the liquids; and segregate the oil and grease from the remaining liquids. The OWS was removed in 2005. The area surrounding SWMUs 303 and 318 is currently covered with grass. An open drainage ditch that collects stormwater runoff from the surrounding area is located east of the former OWS.

Hangars

Several hangars (Hangars AS504, AS515, AS518, AS3900, and AS3905) are located along the edge of the flight line to service aircraft. Hangar AS504, located furthest to the east, was the original hangar and houses a carburetor shop, a battery shop, a paint shop, and an engine maintenance shop. Hangar AS504 was built prior to 1962 and continues to be used for aircraft maintenance activities. Hangars AS515, AS518, AS3900, and AS3905 are located along the edge of the flight line and are used for aircraft maintenance activities. There are no records documenting the waste disposal practices associated with these particular facilities.

Building 410-Gas Station and Garage

A gas station with service bays (Building 410) is located at the southwest corner of Campbell and Bancroft Streets. No information was available on when the gas station was constructed or when the USTs were installed. In 1992, six 4,000-gallon steel USTs, associated piping, and dispenser islands were removed and replaced with three new USTs. These USTs are reportedly still in use. In addition, one 550-gallon heating oil UST and one 285-gallon waste oil UST were removed in 1992. Groundwater contamination in the vicinity of Building AS410 was identified during the Comprehensive Site Assessment (CSA). According to

NCDENR, the UST incidents are eligible for No Further Action (NFA) status with the implementation of Land Use Restrictions (LURs).

Building AS510

Historically, three separate buildings were located within the footprint of Building AS510, immediately east of the original Site 86 boundary. These buildings were used for various purposes, including a parking area for tank trucks, a steam power plant, a battery shop, waste storage, a parachute loft, and parking for military and civilian personnel. The three buildings were demolished and Building AS510 was constructed in 1994 as a training facility. During trenching activities associated with the installation of a fiber optic line, a 500-gallon steel UST was discovered (UST AS510). The use and contents of the UST were unknown; however, the UST was removed in 2006. Petroleum-impacted soil and groundwater were identified during the UST closure activities. According to NCDENR, the UST incidents are eligible for No Further Action (NFA) status with the implementation of Land Use Restrictions (LURs).

Building AS428

A 280-gallon steel UST and associated piping, used to store diesel fuel for the emergency generator in Building AS428, were removed in 1994. The UST closure assessment and subsequent investigations identified petroleum-impacted groundwater. According to NCDENR, the UST incidents are eligible for No Further Action (NFA) status with the implementation of Land Use Restrictions (LURs).

2.3.3 Site 86 Expansion 2010

In 2010, the Site 86 boundary was expanded to include the AS508 Hangar construction area and the portion of the flight line identified as the northeast grass area (**Figures 2-3** and **2-4**). The Site 86 expansion area includes approximately 100 acres within the restricted access area that is crossed by an unlined stormwater drainage ditch. The ditch collects runoff from the eastern portion of Site 86, including the industrial area and hangars, and discharges to the New River (**Figure 2-3**).

The expanded Site 86 boundary also included an area of alleged fuel disposal. In a July 2009 letter to Major General E. G. Payne, Mr. Glenn Peters alleged that between 1971 and 1973, during his time stationed at MCAS New River, he took part in the practice of emptying 400-gallon helicopter fuel cells at the edge of the flight line into the northeast grass area and drainage ditch, shown in **Figure 2-4** (Peters, 2009, personal communication). Mr. Peters stated that he was not aware of when the practice started, though he did indicate that the practice was discontinued during the period when he was stationed at the Base.

2.4 Previous Investigations

Environmental investigations at Site 86 initially focused on petroleum-related impacts associated with three ASTs. Over time, the investigations have expanded to include chlorinated solvents related to several potential source areas located in the vicinity of the original Site 86 boundary. The following sections provide a chronological summary of previous assessment activities performed at Site 86. The approximate location and boundaries of previous areas of investigation are shown in **Figure 2-5** and summarized in **Table 2-1** and **Table 2-2**.

2.4.1 Preliminary Site Investigation (1990)

In November 1990, Dewberry and Davis, Inc. conducted a Preliminary Site Investigation (PSI) of the three ASTs, identified as UST-AS419, UST-AS420, and UST–AS421, located within the original Site 86 boundary (Dewberry & Davis, 1991) (**Figure 2-3**).

During the PSI, a total of 11 soil samples were analyzed for TPH-diesel range organics (TPH-DRO) and VOCs. The soil samples were collected from areas immediately adjacent to the ASTs and ancillary piping.

TPH-DRO was detected above the North Carolina Action Level of 40 milligrams per kilogram (mg/kg) from sample locations SB-5 (7,000 mg/kg) at a depth of 1 to 2 feet and SB-7 (7,500 and 200 mg/kg) at depths of 0.5 to 2 feet and 3.5 to 4 feet, respectively (**Appendix A1-Table 9**). All VOC detections in soil samples were below the applicable North Carolina Soil Screening Levels (NC SSLs). Sample SB-5 was reportedly collected adjacent to the valves on the west side of the ASTs, and SB-7 was reportedly collected adjacent to the valves on the east side of the ASTs. Based upon the location and relatively low concentrations of detected compounds in surface soil, the PSI concluded that impacts were indicative of localized surface spills.

2.4.2 Site Assessment (1992)

In 1992, an SA was completed by O'Brien and Gere, Inc (1992) to evaluate the nature and extent of the impacts identified during the PSI. SA activities included the advancement of 11 soil borings, installation of 7 monitoring well clusters (14 wells total) screened in the upper and lower portions of the surficial aquifer (0–35 feet below ground surface [bgs]), collection of 22 soil samples, and collection of groundwater samples from the 14 monitoring wells and 10 Hydropunch™ locations (**Table 2-1** and **Appendix A2-Figure 3**).

Analytical results for soils collected during the SA indicated that only soil sample B-2 (4-6 feet bgs) contained TPH (124 mg/kg) at concentrations exceeding the North Carolina Action Level of 10 mg/kg (**Appendix A2-Figure 3** and **Environmental Testing Services Laboratory Data Sheets)**.

Laboratory analysis of groundwater samples collected during the SA detected petroleum hydrocarbons and chlorinated solvents (**Appendix A2-OBG Laboratories, Inc. Data Sheets**). Benzene, detected in the sample collected from MW-4 (6 micrograms per liter [µg/L]), was the only petroleum constituent detected at a concentration exceeding the North Carolina Groundwater Quality Standards (NCGWQS). Chlorinated solvents were detected in samples collected from MW-3, MW-4, MW-6, MW-10, and MW-12 at concentrations exceeding the applicable NCGWQS. Tetrachloroethene (PCE) and trichloroethene (TCE) were the most frequently detected and widespread chlorinated solvents. PCE was detected in groundwater samples at concentrations ranging from 4 µg/L (MW-3 and MW-12) to 210 µg/L (MW-10), exceeding the NCGWQS of 0.7 µg/L. TCE was detected in groundwater samples collected at concentrations ranging from 4 µg/L (MW-6) to 280 µg/L (MW-4), exceeding the current NCGWQS of 3 µg/L. The SA concluded that the chlorinated solvents were more frequently detected in samples collected from the deeper monitoring wells, screened from 20 to 30 feet bgs, located south and east of the ASTs. It was also suggested that the ASTs were not considered to be the likely source of these impacts.

Based on the limited extent of the petroleum-related impacts, and discovery of chlorinated solvents in groundwater, further investigation of the site was transferred from the NCDENR UST Program to the IR Program in April 1994, and the site was identified as OU 20, Site 86.

2.4.3 Remedial Investigation (1996)

An RI was completed by Baker (1996) to characterize the nature and extent of contamination identified in the 1992 SA. RI assessment activities included the advancement and sampling of 16 soil borings and the installation and sampling of 17 monitoring wells screened in the surficial, upper Castle Hayne (35 to 65 feet bgs), and middle Castle Hayne (65 to 110 feet bgs) aquifers (**Appendix A3-Figure 3-2)**.

Soil

A total of 41 soil samples were collected from 16 direct push technology (DPT) soil borings. Of the 41soil samples collected, 18 were collected from the surface (≤1 foot bgs) and 23 were collected from the subsurface (>1 foot bgs). Surface and subsurface soil sample locations are shown on **Appendix A3-Figure 3-1.**

Analytical results indicated that semivolatile organic compounds (SVOCs), pesticides, and metals were present in surface soil samples at concentrations that exceeded the current NC SSLs (**Appendix A3-Figure 4-1** and **Figure 4-3,** and **Appendix A3-Table 4-2). P**olynuclear aromatic hydrocarbons **(**PAHs) were detected at concentrations exceeding either the current Adjusted Residential Soil Regional Screening Levels (RSLs) or NC SSLs in 10 of 18 surface soil samples. Dieldrin was detected at concentrations exceeding either the NC SSL (0.81 mg/kg) or the Adjusted Residential Soil RSL (30 micrograms per kilogram [µg/kg]) in 10 of 11 surface soil samples. Metals were detected at concentrations greater than twice the mean Base background concentrations (Baker, 2001), herein referred to as the Base background criteria, and either the current NC SSLs, Adjusted Industrial Soil RSL, or the Adjusted Residential Soil RSL in 10 of the 11 surface soil samples.

Laboratory analytical results for subsurface soil samples indicated concentrations of antimony, arsenic, chromium, copper, lead, nickel, and zinc that exceeded subsurface soil screening criteria (**Appendix A3-Figure 4-3** and **Figure 4-4,** and **Appendix A3-Tables 4-2** through **Table 4-6).** SVOCs and pesticides were not detected above screening criteria in subsurface soil samples. Metals were detected at concentrations exceeding two times the Base background and the NC SSL, Adjusted Industrial Soil RSL, or the Adjusted Residential Soil RSL in 12 of the 16 subsurface soil samples.

Baker concluded that the SVOCs and metals detected predominantly in surface soils may be related to the handling of waste oils that were stored in the former ASTs, or the use of the site as a heavy equipment maintenance and vehicle storage area.

Groundwater

Groundwater samples were collected from 14 existing and 14 newly installed monitoring wells (**Table 2-1**, **Appendix A3-Figure 4-5** and **Figure 4-6,** and **Appendix A3-Table 4-2**).

Benzene, TCE, and PCE were the VOCs detected most frequently at concentrations exceeding the NCGWQS or Maximum Contaminant Level (MCL) (**Appendix A3-Figure 4-5** and **Appendix A3-Tables 4-2)**. Benzene was detected in samples collected from 5 monitoring wells at concentrations ranging from 2 µg/L (MW21IW) to 8 µg/L (MW15IW).

TCE was detected in samples collected from 5 monitoring wells at concentrations ranging from 3 µg/L (MW27 and MW26IW) to 400 µg/L (MW20IW). PCE was detected in samples collected from 3 monitoring wells at concentrations ranging from 1 µg/L (MW16IW) to 69 µg/L (MW10IW). VOC impacts were limited to the upper and lower portions of the surficial aquifer, with the greatest concentrations detected in the samples collected south and east of the former ASTs. The RI concluded that the extents of dissolved phase VOCs were well-defined vertically, that the contaminants did not appear to have migrated into the underlying Castle Hayne aquifer, and that the plume appeared to be migrating to the northeast in the general direction of groundwater flow.

Metals were the most prevalent and widely distributed constituents detected in groundwater (**Appendix A3-Figure 4-6)**. Iron and manganese were the most prevalent metals detected at concentrations that exceeded their respective NCGWQS. Antimony and lead were each detected in one groundwater sample at concentrations exceeding either the NCGWQS or MCL. No other metals were detected in groundwater above applicable screening standards.

Although SVOCs were detected in the groundwater, they were not detected above the screening values. In addition, no pesticides or PCBs were detected in the groundwater samples.

Human Health Risk Assessment

A Baseline Human Health Risk Assessment (HHRA) was conducted to evaluate potential risks to human health. The Baseline HHRA indicated potentially unacceptable non-carcinogenic and carcinogenic risks for the future adult and child residents from exposure to iron, lead, arsenic, and antimony in the groundwater.

Ecological Risk Assessment

A Screening-level Ecological Risk Assessment (SLERA) was conducted to evaluate potential risks to ecological receptors at the site. The SLERA concluded that additional ecological evaluation of the terrestrial habitat was not warranted. This conclusion was based upon the low habitat value (industrial/maintained lawn) of the site and the relatively low levels of potential risks.

2.4.4 Post-Remedial Investigation Activities (1997–1998)

In 1997, Baker conducted post-RI assessment activities to refine the vertical and horizontal extent of VOC contamination in groundwater. The assessment activities included the installation of four monitoring wells (IR86-MW28IW through IR86-MW31IW) within the upper Castle Hayne aquifer, and the collection of groundwater samples from one existing (UST428-GW06) and all newly installed monitoring wells **(Appendix A4-Figure 1-2** and **Table 1-4)**.

TCE was detected in monitoring wells IR86-GW31IW and IR86-GW29IW at concentrations of 9 µg/L and 700 µg/L, respectively, exceeding the current NCGWQS of 3 µg/L. The TCE concentrations in the samples collected from monitoring well IR86-GW31IW in July and September 1997 were greater than the previous maximum concentration of TCE (400 µg/L) in any groundwater samples collected during the RI. Vinyl chloride (VC) (IR86-GW29IW [2 µg/L]) and benzene (UST428-GW06 [3 µg/L]) were each detected in one monitoring well at

concentrations exceeding the applicable NCGWQS. This phase of investigation concluded that the horizontal extent of the dissolved phase chlorinated solvents, previously identified in the RI, extended at least 600 feet east-northeast from Site 86.

2.4.5 Amended Remedial Investigation (2001–2002)

Based on the findings from the post-RI fieldwork, an Amended RI was conducted to summarize data collected after the RI, to further delineate the nature and extent of contamination, and to re-evaluate potential risks to human health and the environment (CH2M HILL/Baker/CDM, 2003). The Amended RI field activities included soil and groundwater sampling in 2001 and monitoring well installation and groundwater sampling in 2002.

Soil

Eight subsurface soil samples were collected from four borings during the Amended RI (**Appendix A5 -Figure 3-1)** to investigate potential sources of groundwater contamination near the helicopter wash pad located hydraulically upgradient of Site 86. TCE was detected above NC SSLs at IR86-IS04-02 (43 µg/kg). Further investigation of the helicopter wash pad area is discussed in Sections 2.4.8.

Groundwater

During the Amended RI activities, 105 groundwater samples were collected at various depth intervals from 43 DPT boring locations (**Appendix A5 - Table 3-1** and **Appendix A5-Figure 3-1**) to further assess the vertical and horizontal extent of groundwater impacts.

Several chlorinated solvents, including PCE, TCE, cis-1,2-dichloroethene (DCE), and VC, as well as and benzene, were detected in multiple groundwater samples. TCE was the most frequently detected and most widespread VOC present and therefore was indicative of the magnitude and extent of the overall VOC plume. TCE was detected in 49 of 105 groundwater samples at concentrations exceeding the NCGWQS of 3 µg/L, at a maximum concentration of 3,758 µg/L (sample IR86-IS41-03 from 30 to 34 feet bgs).

Additionally, 18 groundwater samples were collected from existing and three newly installed monitoring wells (**Appendix A5– Figure 3-1**) to further assess groundwater contamination based on the results of the DPT groundwater samples.

The analytical results indicated that two distinct plumes of VOCs were present, one related to Site 86 and a second apparently originating from an upgradient location possibly associated with the airfield (**Appendix A5-Figure 4-3)**. The Site 86 plume was defined to extend approximately 1,700 feet northeast from the original Site 86 boundary, at a depth of roughly 40 to 50 feet bgs. The upgradient plume was not horizontally delineated.

TCE was the primary VOC within both plumes (**Appendix A5-Figures 4-2, 4-3, 4-6,** and **4-11)**, and to a lesser extent the daughter product cis-1,2-DCE (**Appendix A5-Figures 4-4, 4-7,** and **4-12**). TCE was generally detected at the greatest concentrations in the upper Castle Hayne aquifer, at a depth between 40 and 50 feet bgs. Detections of TCE and cis-1,2-DCE were generally less than 400 µg/L. The extent of PCE concentrations above the detection limit is presented on **Appendix A5-Figures 4-1** and **4-10**.

Complete degradation of TCE in the Site 86 plume was not evident; although concentrations of TCE degradation products were detected, ethene was not detected and alkalinity was not found to be above background levels. **Appendix A5-Figure 4-5** shows the extent of VC concentrations above detection limits in upper Castle Hayne aquifer monitoring wells.

Benzene was present in the northeastern edge of the Site 86 plume (**Appendix A5 - Figures 4-5** and **4-8)** but appeared to be unrelated to Site 86 since it was not present in other portions of the plume. Data indicated that the potential source of the plume was the former ASTs located at Site 86.

Risk Assessment

The Baseline Risk Assessment (RA) was updated to include data collected during the Post-RI, long-term monitoring (LTM), and Amended RI activities. The RA indicated potentially unacceptable carcinogenic risk for the future adult and child residents from exposure to arsenic, VC, and TCE in groundwater. The Baseline RA also indicated potentially unacceptable noncarcinogenic hazard levels for the future adult and child residents. The noncarcinogenic Hazard Index (HI) values that exceeded the USEPA acceptable hazard level of 1.0 were primarily from exposure to iron, arsenic, and TCE in the groundwater. For both cases, it was noted that groundwater at Site 86 is not likely to be used as a potable water source. Additionally, the report concluded that PAH and metals detections did not pose unacceptable risk to future adult and child residents.

The SLERA was also updated to include data collected during the Post-RI, LTM, and Amended RI activities and to evaluate the stormwater retention pond located northeast of Site 86 (**Figure 2-3**). The SLERA identified moderate risks to terrestrial plants and invertebrates based on the exposure to pesticides (4,4′-dichlorodiphenyldichloroethane [4,4′-DDD], 4,4-dichlorodiphenyldichloroethene [4,4-DDE], 4,4′-dichlorodiphenyltrichloroethane [4,4′-DDT], and dieldrin) and metals (aluminum, chromium, iron, and vanadium) in soil, and exposure to bis(2-ethylhexyl)phthalate, aluminum, and iron in shallow groundwater. However, the SLERA concluded that based on the low habitat value, risks would be negligible and additional evaluation was not required. The SLERA also concluded that no evaluation was required for the retention pond located northeast of Site 86 based on the incomplete exposure pathway.

2.4.6 Long-term Monitoring (1998–2004)

Site 86 was added to the LTM Program in July 1998. Although no Record of Decision (ROD) was in place, the monitoring program at Site 86 was implemented to assess contaminant trends. Groundwater samples were collected from 19 monitoring wells on a quarterly basis between 1998 and 2000, and on an annual basis between 2001 and 2004. Groundwater samples collected under this program were analyzed for VOCs and natural attenuation indicator parameters (NAIPs).

The LTM indicated that VOCs were present in samples collected from both the surficial and upper Castle Hayne aquifers at concentrations exceeding the applicable NCGWQS. TCE and VC were the most widely distributed VOCs, with the greatest concentrations generally found at depths of 40 to 45 feet bgs (**Appendix A6-Figure 17)**. The 2004 LTM report concluded that the primary VOC plume, located approximately 700 feet to the east-northeast of the original Site 86 border, was migrating to the northeast in the direction of

groundwater flow and extended to a maximum depth of approximately 60 to 65 feet bgs (Engineering and Environment Inc., 2004).

In September 2005, an LTM Optimization Report (CH2M HILL, 2005) recommended removal of Site 86 from the LTM program, due to the ongoing investigations and studies in which the LTM requirements were being fulfilled or exceeded. Accordingly, Site 86 was removed from the LTM program in 2005.

2.4.7 Phase II SWMU Confirmatory Sampling (2005)

In 2002, a RCRA Confirmatory Sampling Investigation (CSI) was conducted at SWMU 318 and SWMU 303 ((Baker, 2005)), as shown in **Figure 2-4**. The CSI was completed in two phases after a RCRA Facility Assessment (RFA) concluded that a release had likely occurred at SWMUs 303 and 318. Phase I of the CSI consisted of a confirmatory soil investigation and Phase II consisted of additional soil sampling and a groundwater investigation based on the results of Phase I. SWMUs 303 and 318 were located immediately south of the original Site 86 boundary (**Appendix A7 – Figure 1-2)**.

The Phase II field investigation consisted of (1) subsurface soil sampling from three soil borings (SWMU318-IS01, SWMU318-IS02 and SWMU318-IS03), (2) surface soil sampling from three surface soil locations (SWMU318-SS01, SWMU318-SS02, and SWMU318-SS03) with two of the surface soil locations along the adjacent drainage ditch, and (3) groundwater sampling from three temporary monitoring wells (SWMU318-TW01, SWMU318-TW02 and SWMU318-TW03) (**Appendix A7 – Figure 1)**.

Soil

Analytical results for soil samples collected during the CSI indicated that chlorinated solvents and PAHs were present in the soil sample collected from boring SWMU318-SS01 at concentrations exceeding the applicable USEPA RSLs or NC SSLs. Metals, including arsenic cadmium, chromium, and silver, were also detected at multiple sample locations, at concentrations exceeding the RCRA Base background concentrations (the mean plus two standard deviations) and applicable USEPA RSLs or NC SSLs (**Appendix A7 – Figure 2)**.

Groundwater

Analytical results for groundwater samples collected during the CSI indicated that benzene, TCE, VC, naphthalene, and arsenic were present at concentrations exceeding the applicable NCGWQS (**Appendix A7 - Figure 3**). Based on the analytical results, additional investigation of SWMUs 303 and 318 was recommended.

2.4.8 SWMU 303/318 RCRA Facilities Investigation (CH2M HILL, 2006a)

An RFI was initiated in February 2004 to assess the nature and extent of impacts identified during the CSI at SWMUs 303 and 318, and to evaluate the potential risks to human health and the environment (CH2M HILL, 2006a). The RFI field activities included:

- Collection of 26 surface soil, 62 subsurface soil, and 159 groundwater samples from DPT boring locations, and groundwater samples from eight existing monitoring wells (**Appendix A8 – Figures 2-1** and **2-2**)
- Installation and sampling of 11 monitoring wells based on results of soil sampling activities (**Appendix A8 – Figures 2-1** and **2-2**)

Soil

In laboratory analysis of soil samples collected during the RFI, VOCs, SVOCs, and metals were detected at concentrations exceeding the applicable screening criteria (USEPA Region 9 preliminary remediation goals [PRGs] and NC SSLs), in both surface and subsurface soils.

VOCs detected in surface soils at concentrations exceeding the applicable SSLs included butylbenzene, isopropylbenzene, naphthalene, and PCE (**Appendix A8 - Figure 4-1** through **4-3)**. Naphthalene was the most prevalent of the VOCs, detected in seven of the surface soil samples at concentrations ranging from 1.1 J to 57,800 g/kg.

SVOCs benzo(a)anthracene (estimated value of 350 g/kg) and benzo(a)pyrene (estimated value of 380 g/kg) were detected in surface soil sample SWMU318-SB01-00 at concentrations exceeding the applicable SSLs.

Bromoform (estimated value of 5 g/kg) and naphthalene (3,630 g/kg), collected from SWMU318-SB03-04, were the only VOCs detected in subsurface soil samples at concentrations exceeding the SSLs (1.25 g/kg and 585 g/kg), respectively.

PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene, were detected at concentrations above the applicable SSL in only one subsurface soil sample collected from SWMU318-SB05-03 at a depth of 5 to 7 feet bgs.

Arsenic was detected in 5 of the surface soil samples and 24 of the subsurface soil samples at concentrations ranging from an estimated value of 0.48 to 51 mg/kg, exceeding twice the mean Base background concentration and/or the applicable SSL. Arsenic was detected in surface soil sample SWMU318-SB09-00 (2.6 mg/kg) and four subsurface soil samples (SWMU318-SB04-02, SWMU318-SB14-03, SWMU318-SB15-03, and SWMU318-SB17-03) at concentrations exceeding the applicable screening criteria, including the USEPA Region 9 PRG (1.59 mg/kg), and Base background screening values (1.71 mg/kg and 0.88 mg/kg, respectively).

Silver (estimated value of 4.6 mg/kg) was detected in surface soil sample SWMU318-SB01-00 at a concentration exceeding the NC SSL (0.223 mg/kg) and Base background screening values (0.23 mg/kg and 0.37 mg/kg, respectively).

Mercury was detected in 20 of the subsurface soil samples at concentrations ranging from an estimated value of 0.03 to 0.11 mg/kg. The detected concentration in sample SWMU318-SB06-02 (0.11 mg/kg) exceeded the North Carolina Soil-to-Groundwater Concentration (STGC) (0.015 mg/kg) and Base background screening values (0.07 mg/kg and 0.08 mg/kg, respectively).

The RFI concluded that the extent of impacted soil at SWMUs 303 and 318 was limited to the vicinity of the helicopter pad area. It was recommended that contaminated soil beneath the wash pad be removed.

Groundwater

The analytical results for the RFI indicated the presence of multiple VOCs and SVOCs in groundwater at concentrations exceeding the NCGWQS. Metals were not detected above NCGWQS.

Benzene, TCE, cis-1,2-DCE, and VC were detected in groundwater samples collected throughout the investigation area (TCE was detected in 43 of the samples at concentrations exceeding the NCGWQS). The extent and magnitude of the VOC impacts correlate with the impacts identified in the Amended RI, as shown in **Appendix A8 – Figures 4-6** through **4-19**. The RFI also identified several SVOCs at concentrations exceeding the applicable NCGWQS.

Naphthalene was the most frequently detected SVOC contaminant in groundwater, and was detected in 27 of the 159 groundwater samples at concentrations exceeding the NCGWQS. These concentrations ranged from 6.4 g/L to 3,040 g/L, exceeding the current NCGWQS of 6 g/L (**Appendix A8 – Figures 4-7, 4-12,** and **4-17**).). The naphthalene plume in the surficial aquifer extends approximately 480 feet west of the Helicopter Wash Rack.

Additional SVOCs, including acenaphthene, carbazole, dibenzofuran, 2,4-dibenzofuran, 2,4-dimethylphenol, 2-methylnaphthalene, 4-methylphenol, 2-methylphenol, and bis(2-ethylhexyl)phthalate, were also detected in multiple groundwater samples at concentrations exceeding the applicable NCGWQS. The SVOC impacts were found to be limited to the surficial aquifer, at depths of 10 to 30 feet bgs.

Risk Assessments

The Baseline RA indicated potentially unacceptable carcinogenic risk for the future adult and child residents from exposure to VC and TCE in groundwater. The Baseline RA also indicated potentially unacceptable noncarcinogenic hazard levels for the future construction worker. The noncarcinogenic HI values that exceeded the USEPA acceptable hazard level of 1.0 were primarily related to dermal exposure to TCE in groundwater. For both cases it was noted that groundwater at Site 86 is not likely to be used as a potable water source. Additionally, the report concluded that SVOCs did not pose unacceptable risks to future adult and child residents or future construction workers.

The SLERA was also conducted to evaluate potential risks to ecological receptors based on the environmental impacts present at SWMU 303/318. The SLERA identified potentially adverse risks to ecological receptors based on exposure to VOCs (1,2-dichlorobenzene and 1,4-dichlorobenzene), SVOCs (bis-[2-ethylhexyl]phthalate and butylbenzylphalate), and metals (cadmium and chromium) in soil. The SLERA recommended soil removal to reduce the ecological risks to an acceptable level.

RFI Conclusions

The RFI concluded that the identified impacts to soil and groundwater were related to activities that occurred prior to the construction of Building AS515, the wash pad, and the ASTs, and therefore all future investigation and potential remedial actions should be managed under CERCLA. Consequently, SWMUs 303 and 318 were transferred into the IR Program and incorporated into Site 86. However, based on a Tier I Partnering Team decision, the impacted soils, recommended for removal, would continue to be addressed as part of the RCRA program.

2.4.9 Interim Measure (Shaw, 2006)

In 2005, Shaw removed approximately 1,200 tons of impacted soil from SWMUs 303 and 318 (**Appendix A9 – Figure 1)** under Interim Measure, as recommended by the RFI. Soil

removal activities occurred in three phases during November and December 2005. Confirmatory soil samples indicated that all target contaminants were below the applicable USEPA Region 9 Industrial PRGs and NC Soil-to-Groundwater Maximum Soil Contaminant Concentrations (MSCCs) or RCRA Base background concentrations (the mean plus two standard deviations).

2.4.10 Technology Evaluation (2003) and Air/Ozone Sparging Pilot Study (2006)

Technology Evaluation

In March 2003, CH2M HILL completed a Technology Evaluation for Site 86 (CH2M HILL, 2003).The technologies selected for evaluation included air sparging/biosparging, hydrogen sparging, co-metabolic (methane or propane) sparging, and ozone sparging. Based on the evaluation, the selected approach for the pilot study was air and ozone sparging. Because of the shape of the plume (long, narrow, significant depth) and site access restrictions (active flight line), horizontal directional drilling (HDD) was considered the most cost-effective method of reagent delivery.

Air/Ozone Pilot Study

In September 2004, a 950-foot long, 65-foot deep HDD well was constructed with a 350-foot section of screen (**Appendix A10 – Figure 2-1** and **3-1**). Additionally, 12 monitoring wells were installed in the Pilot Study area in a nested configuration within the upper Castle Hayne aquifer. Groundwater monitoring was conducted throughout the Pilot Study and consisted of a baseline sampling event in October 2004, six Pilot Study monitoring events conducted from March 2005 to January 2006, and one rebound monitoring event in May 2006.

The results of the Pilot Study indicated that TCE concentrations in the upper Castle Hayne aquifer were reduced by 99 percent in groundwater samples collected from monitoring wells with baseline concentrations exceeding 50 µg/L. The maximum baseline concentration of TCE was detected in the groundwater sample collected from IR86-MW38IWC (1,200 µg/L). The zone of influence created by sparging operations was observed to propagate 50 feet on either side of the well (CH2M HILL, 2006b). Groundwater samples collected from 13 of the 16 monitoring wells within the treatment area contained target VOCs below the NCGWQS within 1 year of the start of system operation. The effects of ozone sparging proved to be inconclusive due to the limited period (less than 6 months) of continuous ozone generation.

2.4.11 UST AS410N

In 1992, a UST closure was conducted at UST AS410N (**Figure 2-4**) by Environment & Regulatory Consultants, Inc. (ERC, 1992). The closure involved six 4,000-gallon steel tanks, associated piping, and dispenser islands, which were part of the gas station that served the MCAS New River. A CSA was performed in 1994 by Richard Catlin & Associates, Inc. (Catlin, 1994) to address groundwater contamination identified during the UST closure assessment. The results of the CSA confirmed that groundwater impacts were present in the area of the former and current UST basins (**Appendix A11 – Figures 5-4** to **5-9**). In addition, laboratory analysis of soil samples collected during the installation of permanent monitoring wells during the groundwater portion of the CSA indicated that soil impacts were not present in the areas surrounding the active and former UST basins.

In 1997, an air sparge and soil vapor extraction (AS/SVE) system was installed by J. A. Jones Environmental Services Company to remediate the petroleum-impacted groundwater. The system operated from February 1997 until November 1998. Analytical results for groundwater samples collected after AS/SVE system shutdown indicated that concentrations of petroleum constituents had been reduced to levels below the NCGWQS, with the exception of benzene in monitoring wells AS410N-1 (22 µg/L) and AS410N-19 (13 µg/L).

In a Notice of Regulatory Requirement (NORR) issued by NCDENR for AS410N in 2000, NCDENR indicated that NFA order would not be issued for the site due to the lack of soil investigation within the former UST basins during the CSA. Subsequent correspondence from NCDENR indicates that the UST incident is eligible for NFA status with the implementation of LURs.

2.4.12 UST AS410S

UST AS410S (**Figure 2-4**) consisted of one 550-gallon heating oil tank and one 285-gallon waste oil tank associated with the service station located at Building AS410. The USTs were removed in 1992 under the direction of ERC (ERC, 1992). A closure soil sample was collected beneath the former heating oil UST and laboratory analytical data for the closure sample indicated the presence of TPH diesel range organics (DRO at 6,900 mg/kg) and TPH gasoline range organics (GRO at 1,200 mg/kg).

Groundwater Technology Government Services, Inc. (GSI) conducted a site check in March of 1993 (GSI, 1993), which included the installation of three monitoring wells (AS410S-1, AS410S-2 and AS410S-3) and the collection of soil samples from each of the monitoring well boreholes (**Appendix A12 – Figure 2**). Analytical results indicated petroleum-related constituents were not present in the soil or groundwater above applicable MSCCs or NCGWQS.

GSI conducted an additional site check in October of 1993 to investigate adsorbed-phase hydrocarbons in the soils and hydrocarbon-impacted groundwater beneath the site. This included the installation of five additional monitoring wells (AS410S-4, AS410S-5, AS410S-6, AS410S-7, and AS410S-8) and the collection of soil samples from each of the monitoring well boreholes (**Appendix A12 – Figure 2**) (GSI, 1994). Analytical results indicated petroleum-related constituents were not present in the soil above applicable MSCCs or groundwater above the NCGWQS. The concentrations of benzene in the groundwater samples collected from AS410S-7 and AS410S-8 were above the applicable NCGWQS. Additionally, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, and phenanthrene were detected in groundwater samples (**Appendix A12 – Table 2**).

In a NORR issued for AS410S in 2001, NCDENR indicated that an NFA order would not be issued for the site due to the lack of soil investigation within the former tank basins and, more specifically, the lack of groundwater assessment within the former tank basins of UST AS410S. Subsequent correspondence from NCDENR indicates that the UST incident is eligible for NFA status with the implementation of LURs.

2.4.13 UST AS428

UST AS428 (**Figure 2-3**) consisted of a 280-gallon steel tank and associated piping. The UST was installed in 1985 to fuel the diesel powered emergency generator located in Building AS428; it was removed in 1994.

In 1994, R. E. Wright & Associates, Inc. conducted a site check, which included the installation of three monitoring wells and the collection of one soil sample from each of the monitoring well boreholes. Analytical results indicated that a release had occurred, and UST AS428 was recommended for removal (R.E. Wright & Associates, 1994).

To assess the release, Catlin completed a CSA in 1996 (Catlin, 1996), which included 10 Hydropunch™ points, 5 surficial aquifer monitoring wells, and 2 middle Castle Hayne monitoring wells. Analytical results indicated that shallow groundwater was impacted by petroleum hydrocarbons in the vicinity of the former UST basin (**Appendix A13 – Figures 5.2 through 5.7 and 5.10**). In addition, Catlin reported that approximately 2.5 feet of free phase petroleum product was observed in monitoring well USTAS428-MW03. Catlin completed a Corrective Action Plan (CAP) in 1997 that recommended the removal of free product from USTAS428-MW03 and continued monitoring of site wells for evaluation of monitored natural attenuation (MNA) as a remedy for site cleanup.

In 1999, J. A. Jones conducted monthly aggressive fluid vapor recovery (AFVR) events to remove product from USTAS428-MW03. Additionally, quarterly groundwater monitoring events were conducted for 1 year after completion of the AFVR events. Because the AFVR events could not completely remove the free product from monitoring well USTAS428-MW03, soil removal activities were conducted between December 1999 and March 2000 to remove the remaining product lines and approximately 18 tons of petroleum-impacted soil (J. A. Jones, 2002). Confirmation samples collected from the source area excavations indicated that the impacted soils had been removed from the former UST basin and product piping lines. The analytical results for groundwater samples collected after the soil removal action indicated that only one of the site monitoring wells (USTAS428-MW06) contained a concentration of benzene (7 µg/L) that exceeded the NCGWQS of 1 µg/L. NCDENR has indicated that the UST incident is eligible for NFA status with the implementation of LURs.

2.4.14 UST AS510

UST AS510 consisted of a 500-gallon steel tank that was discovered during trenching activities associated with the installation of a fiber optic line (**Figure 2-4**). The use and contents of the UST are unknown. The UST was removed under the direction of Sovereign Consulting in 2006. Sovereign collected soil samples during the UST removal and installed one temporary monitoring well in the former tank basin. Analytical results indicated the presence of numerous petroleum constituents in soil at concentrations exceeding the applicable MSCCs. Additionally, benzo[a]pyrene, 2-methylnaphthlene, and C9-C22 aromatics were detected in soil at concentrations that exceeded the applicable MSCCs. Groundwater analytical results indicated the presence of benzene, naphthalene, and C9-C22 aromatics at concentrations exceeding the applicable NCGWQS.

To further investigate the release, Catlin conducted a Phase I Limited Site Assessment (LSA) in 2007 that involved the installation and sampling of a monitoring well (USTAS510-MW01)

in the former UST basin (Catlin, 2007). In the groundwater sample, C9-C22 aromatics (<260 µg/L), naphthalene (10.6 µg/L), and benzene (5.79 µg/L) were detected at concentrations that exceeded the currently applicable NCGWQS (**Appendix A14 - Table 4a** through **4c and Figure 5**). NCDENR has indicated that the UST incident is eligible for NFA status with the implementation of LURs.

2.5 Results of Previous Investigations

The following sections discuss the nature and extent of contamination for all media at Site 86, as identified through the investigations discussed in Section 2.4.

2.5.1 Soil

Between 1990 and 2006, multiple investigations were conducted to assess the impacts to surface and subsurface soil, the most comprehensive of which was the 1996 RI (Baker, 1996). Further characterization was completed as part of the Amended RI (CH2M HILL/Baker/CDM, 2003) and the RFI (CH2M HILL, 2006a). Laboratory analytical testing focused upon petroleum hydrocarbons, pesticides/PCBs, VOCs, SVOCs, Target Analyte List (TAL) metals, and total organic carbon (TOC). Based on the results of these previous investigations, the following conclusions were reached:

Site 86

- TPH was detected in soil samples collected from locations within the original Site 86 boundary, at concentrations ranging from 124 mg/kg to 7,000 mg/kg, exceeding the NCDENR UST Program Action Level of (10 mg/kg). However, subsequent sampling for VOCs did not indicate the presence of VOCs in the surface or subsurface soils at concentrations exceeding the applicable criteria.
- SVOCs, primarily PAHs, were detected at concentrations that exceeded applicable screening criteria in surface soil samples throughout the original Site 86 area.
- Dieldrin was detected in 10 of 11 surface soil samples exceeding current screening criteria. The greatest concentration of dieldrin (44 µg/kg) was detected in soil sample AST-SB01 (**Appendix A3-Figure 4-1**). Pesticides were detected at concentrations below applicable standards throughout the original Site 86 boundary with no discernable pattern of distribution.
- Metals, including antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc, were detected in surface and subsurface soil samples at concentrations exceeding screening criteria. The elevated metals concentrations were attributed to the handling of waste oil.

SWMU 303 and 318

Soils impacted by VOCs, SVOCs, and metals soils identified during the SWMU 303/318 RFI were removed during the 2005 Interim Measure completed by Shaw.

2.5.2 Groundwater

The most comprehensive site-wide groundwater assessment at Site 86 took place during the RI (Baker, 1996). Further characterization was completed as part of the Amended RI (CH2M

HILL, Baker/CDM, 2003), LTM events, RFI (CH2M HILL, 2006a), and Pilot Study (CH2M HILL, 2006b). Over the course of these investigations, groundwater samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and total metals. Based on the results of these previous investigations, the following conclusions were reached:

Site 86

- Dissolved-phase petroleum hydrocarbon (primarily benzene) contamination is limited to the surficial and upper Castle Hayne aquifers. The greatest concentrations of benzene (all less than 10 µg/L) were found in the vicinity of the former ASTs. The magnitude and extent of the benzene plume appeared to be relatively stable between the original RI conducted in 1995 and the LTM from 1998-2004.
- Chlorinated volatile organic compounds (CVOCs) are present in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers. TCE and VC were the most widely distributed constituents, with the greatest concentrations occurring at a depth of roughly 40 to 45 feet bgs. The horizontal extent of the CVOC contamination exceeding the NCGWQS was approximately 1,100 feet northeast (downgradient) of the center of the original Site 86 boundary. Analytical results from the LTM program indicated that the vertical extent of CVOC contamination is approximately 60 to 65 feet bgs.
- The Amended RI concluded that complete degradation of TCE in the Site 86 plume was not evident. Although concentrations of TCE degradation products were being generated, ethene was not detected and alkalinity was not above background levels.
- TCE concentrations were reduced by 99 percent compared to baseline levels in groundwater samples collected from monitoring wells surrounding the Pilot Study HDD air sparge well. Concentrations of VOCs in 13 of the 16 monitoring wells within the target area were treated to the NCGWQS within 1 year (CH2M HILL, 2006b).
- Inorganic compounds (metals) were detected in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers during the original RI. These detections consisted predominantly of antimony, iron, manganese, and lead, which exceeded their respective NCGWQS and two times the mean Base background concentration. Therefore, the metals exceedances are considered to be a result of the past handling of waste oil at the site.

SWMU 303 and 318

- Benzene exceeded the NCGWQS in three groundwater samples collected from the surficial aquifer during the CSI. The RFI confirmed the presence of benzene above the NCGWQS. The maximum concentration of benzene was 220 µg/L, in SWMU315-GW15-01. The RFI also identified numerous small benzene plumes exceeding the NCGWQS in the upper Castle Hayne aquifer.
- Chlorinated solvents (TCE and VC) have been historically detected in the surficial aquifer at SWMU 318. The groundwater samples collected from the surficial and upper Castle Hayne during the RFI indicated the presence of several chlorinated solvents above the NCGWQS across the site. It is evident that constituents related to SWMUs 303/318 have migrated into Site 86 and have now commingled with the chlorinated solvent contamination associated with Site 86.

- Naphthalene, acenaphthene, carbazole, dibenzofuran, 2,4-dibenzofuran, 2,4-dimethylphenol, 2-methylnaphthalene, 4-methylphenol, 2-methylphenol, and bis(2-ethylhexyl)phthalate were detected in surficial aquifer groundwater samples at concentrations that exceeded the NCGWQS. Naphthalene was the most widely distributed SVOC, with a maximum concentration of 3,040 µg/L (SWMU315-MW01-01).

2.5.3 Human Health Risk Assessment

Baseline HHRAs were conducted as part of the RI by Baker (1996) (updated in the Amended RI [Baker, 2003]) and in the RFI (CH2M HILL, 2006a) to evaluate potential risks to human health. The HHRAs considered the most likely routes of potential human exposure for both current and future risk scenarios. Current and future land use scenarios were considered to evaluate the potential for unacceptable risks associated with exposure to existing site conditions.

The results of the HHRAs concluded:

- No unacceptable risks or hazard levels were identified for the current adolescent or adult trespassers, or current military Base personnel.
- Exposure to the known concentrations of TCE, arsenic, and VC in groundwater could result in adverse health effects for the future adult and child resident and future construction worker.

The Baseline HHRAs noted that the groundwater at Site 86 and SWMU 303/318 is unlikely to be used as a source for potable water.

2.5.4 Ecological Risk Assessment

SLERAs were conducted as part of the 1996 RI (and updated in the 2003 Amended RI) and as part of the 2005 RFI to evaluate potential risks to ecological receptors on or adjacent to the original Site 86 and SWMUs 303/318.

The Site 86 SLERA identified a moderate risk to terrestrial invertebrates and plants based on the site-related contaminants (PAHs, mercury, copper, vanadium, iron, chromium, and aluminum) in soil at concentrations exceeding surface soil screening values. The Site 86 SLERA also identified a risk to terrestrial plants and invertebrates resulting from the potential discharge of groundwater containing bis(2- ethylhexyl)phthalate, aluminum, and iron to surface water at concentrations exceeding surface water screening values. The Site 86 SLERA concluded that additional ecological evaluation of the terrestrial habitat is not recommended. This conclusion was based upon the low habitat value (industrial/ maintained lawn) of the site and the calculated levels of potential risks.

The SWMU 303/318 SLERA identified an adverse risk to ecological receptors based on several site-related contaminants (VOCs, SVOCs, and metals) in soil. The impacted soils causing the elevated risk were removed as part of the 2005 Interim Measure, resulting in the elimination of ecological risks in the former SWMU 303/318 area.

2.6 Data Gaps from Previous Investigations

Despite the completion of numerous investigations at Site 86, the nature and extent of contamination had not been fully characterized. Specific data gaps included the following:

- The expansion of the Site 86 boundary to include the flight line and soil and groundwater impacts identified at SWMU 303 and SWMU 318
- The identification and characterization of additional sources within the expanded site boundary
- The evaluation of the migration and dispersal of contamination by evaluating surface water, sediment, soil, and groundwater within the expanded site boundary
- The evaluation of the potential receptors within the new site boundary by collecting data describing human populations and environmental systems susceptible to contaminant exposure
- The evaluation of the risk associated with any contaminants at Site 86 to human health and the environment
- The assessment of the hydrogeologic characteristics of the upper Castle Hayne aquifer for the purpose of evaluating the fate and transport of contaminants

TABLE 2-1
Summary of Parameters Analyzed during Previous Investigations
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No.20
MCB CamLej, Jacksonville, North Carolina

Investigation	Sample Date	Sample Media	Total Petroleum Hydrocarbons (TPH) (California GC, 5030, 3550, or EPA IR 418.1)	TPH-DRO (Diesel Range Organics) (EPA 3550)	TPH-GRO (Gasoline Range Organics) (EPA 5030)	VPH (Volatile Petroleum Hydrocarbons) (MADEP)	EPH (Extractable Petroleum Hydrocarbons) (MADEP)	VOCs (Volatile Organic Compounds) (8247/8240A, USEPA 602, USEPA 8100, OLM 04.2/04.3, or 8260)	BTEX (Benzene, Toluene, Ethylbenzene, Xylenes)	SVOCs (Semivolatile Organic Compounds) (8270, USEPA 625, USEPA 8100, or OLM 04.2/04.3)	PAHs (Polynuclear Aromatic Hydrocarbons) (USEPA 610)	Target Analyte List (TAL) Metals*	Dissolved TAL Metals*	RCRA Metals (ILM 04.1/6010B/7470A)	Metals (3030C)	Total Lead (USEPA 239.2)	Total Suspended Soils (TSS)*	Total Dissolved Solids (TDS)*	Pesticides*	Polychlorinated biphenyls (PCBs)*	Flashpoint (EPA 1010)	Toxicity Characteristic Leaching Procedure (TCLP) (EPA 1311)	pH (EPA 9045)	Chloride (EPA 300)	Natural Attenuation Indicator Parameters (NAIPs)
Preliminary Site Investigation	1990	Soil	X					X																		
UST Assessments - UST AS419-21	1992	Soil	X																		X	X	X			
		Groundwater						X		X												X				
UST Assessments - UST AS410S	1992	Soil	X	X	X																					
	1993	Soil	X																							
		Groundwater							X																	
UST Assessments - UST AS410N	1994	Soil	X																		X	X	X			
		Groundwater						X								X										
	1997-2000	Groundwater						X																		
UST Assessments - UST AS428	1994 -1995	Soil	X	X	X																X		X			
	1995	Soil	X																		X		X			
		Groundwater						X								X										
	1996	Groundwater						X		X																
	1997	Soil		X	X																					
		Groundwater						X			X															
	1998-2001	Groundwater						X			X															
Remedial Investigation	1995-1996	Soil	X					X		X		X							X	X						
		Groundwater						X		X		X	X				X	X	X	X						
Post-Remedial Investigation Sampling	1997-2002	Groundwater						X																		
RCRA Facilities Investigation	2004-2005	Soil						X		X				X												
		Groundwater						X		X				X												
Long Term Monitoring	1998-2004	Groundwater						X																		X
Amended Remedial Investigation	2001-2002	Soil						X																		
		Groundwater						X																		X
Phase II SWMU Confirmatory Sampling Report	2002	Soil						X		X				X												
		Groundwater						X		X				X												
Air/Ozone Pilot Study	2004-2006	Groundwater						X																	X	
UST Assessments - UST AS510	2006	Soil				X	X	X		X																
		Groundwater				X	X	X		X					X											
	2007	Groundwater				X	X	X		X																

Notes:
MADEP - Massachusetts Department of Environmental Protection
TCL - Target Compound List
RCRA - Resource Conservation and Recovery Act
SWMU- Solid Waste Management Unit
* Analytical Methods not specified in Remedial Investigation Report (Baker, 1996)
UST - Underground Storage Tank
USEPA - United States Environmental Protection Agency

Created By: K. Ramsey/CLT
Checked By: D. Brown/CLT

TABLE 2-2
Summary of Previous Investigations
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Site 86 Investigation	Year	Media Investigated	Purpose of Investigation	Type of Contamination Investigated	Activities	Aquifer	Results and Conclusions
Preliminary Site Investigation (Dewberry and Davis, Inc.)	1990	Soil	Evaluate contamination in areas adjacent to ASTs and piping	TPH, VOCs	Soil sampling	NA	Contamination indicative of localized surface spills. ASTs incorporated into UST program as UST-AS419, 420, 421.
UST Assessments - UST AS419-21 (O'Brien and Gere Engineers, Inc.)	1992	Soil, Groundwater	Determine the nature and extent of subsurface contamination as a result of three ASTs on site used for temporary storage of waste petroleum products	TPH, VOCs	Monitoring well installation, soil sampling, groundwater sampling, estimated hydraulic conductivity of new wells	Surficial	Lack of significant petroleum related impacts, discovery of chlorinated solvent contamination in groundwater, UST-AS419-21 (original Site 86) transferred from the UST Program to the IRP in April 1994
UST Assessments - UST AS410N CSA (Richard Catlin & Associates, Inc.)	1994	Soil, Groundwater	Investigate area release	Purgable Organics, Total Lead, TPH, Flashpoint, TCLP, pH	Slug Testing, Grain Size Analysis	Surficial, UCH	Soil had not been impacted, confirmed that groundwater impacts were present in the area of the former and current UST basins
UST Assessments - UST AS410N Annual Monitoring Report (Richard Catlin & Associates, Inc.)	1997-2000	Groundwater	Request for NFA Status from NCDENR based on groundwater monitoring results following installation and operation of air sparge/soil vapor extraction system	VOCs	Groundwater sampling	Surficial, UCH	Air sparge/soil vapor extraction system was effective in reducing the groundwater contamination at Building AS-410 Site, recommend NFA Status from NCDENR
UST Assessments - UST AS410S (Environment and Regulatory Consultants, Inc.)	1992	Soil	UST removal, closure sample	TPH	Soil sampling	NA	Analytical results indicate presence of DRO, GRO
UST Assessments - UST AS410S (Groundwater Technology Government Services, Inc.)	1993	Soil, Groundwater	Evaluate analytical data associated with tank removal	TPH, BTEX	Installation of monitoring wells, soil sampling, groundwater sampling	Surficial	Petroleum-related constituents not present in soil or groundwater above applicable soil-to-groundwater MSCCs or NCGWQS
UST Assessments - UST AS428 (R.E. Wright & Associates, Inc.)	1994	Soil, Groundwater	Perform three well site check in area adjacent to UST AS428 to check for releases associated with tank removal	TPH DRO and GRO, BTEX, SVOCs, Total Lead	Installation of three monitoring wells, collect 1 soil sample	Surficial	Release had occurred, UST AS428 recommended for removal
UST Assessments - UST AS428 CSA (Richard Catlin & Associates, Inc.)	1996	Soil, Groundwater	Determine site geology, impact of release to surrounding soils and groundwater	TPH, VOCs, SVOCs, Total Lead	Installation of monitoring wells, groundwater sampling	Surficial, UCH	Petroleum constituents impacting shallow groundwater near former UST basin, approximately 2.5 ft of free product observed near well USTAS428-MW03
UST Assessments - UST AS428 CAP (Richard Catlin & Associates, Inc.)	1996-1997	Soil, Groundwater	Address petroleum hydrocarbon contamination and provide conceptual plans in accordance with NC Administrative Code	DRO, GRO, VOCs, SVOCs	Installation of two monitoring wells, sample one well	Surficial	Recommended the removal of free product from USTAS428-MW03 and continued monitoring of site wells for evaluation of monitored natural attenuation (MNA) as a remedy for site cleanup
UST Assessments - UST AS428 (J.A. Jones, 2002)	1998-1999	Soil, Groundwater	Request for NFA	GRO, DRO,VOCs, PAHs	AFVR, soil removal, groundwater sampling	Surficial	Analytical results and source removal activities result in site being recommended for NFA Status
UST Assessments - UST AS510 (Sovereign)	2006	Soil, Groundwater	Soil samples and well installation associated with UST removal	VOCs, SVOCs, MADEP VPH, MADEP EPH	Soil sampling, well installation, groundwater sampling	Surficial	Analytical results indicated the presence of numerous petroleum constituents in soil at concentrations exceeding the Soil-to-Groundwater MSCCs, groundwater analytical results indicated benzene, naphthalene, and C9-C22 aromatics at concentrations exceeding the applicable NCGWQS
UST Assessments - UST AS510 - Phase I LSA (Richard Catlin & Associates)	2007	Groundwater	Further investigate reported release	VOCs, SVOCs, MADEP VPH, MADEP EPH	Monitoring well installation, groundwater sampling	Surficial	Site meets criteria for Industrial/Commercial land use and Low Risk classification, site meets conditions for NFA status with "Notice of Residual Petroleum" or Land Use , Restrictions, contaminants in soil samples were identified as exceeding soil-to-groundwater and residential MSCCs, benzene and C9-C22 Aromatic concentrations in groundwater samples exceeded NCGWQS
1996 Remedial Investigation (Baker Environmental Inc.)	1995-1996	Soil, Groundwater	Characterize nature and extent of contamination	VOCs, SVOCs, TAL Metals, TSS, TDS, TCL Organics, TPH	Monitoring well installation, groundwater sampling, soil sampling	Surficial, UCH, MCH	Maximum VOC concentrations in groundwater were detected southeast of the ASTs, VOCs were migrating to the north-northeast, VOC plume limited to surficial aquifer
Post-Remedial Investigation (Baker Environmental Inc.)	1998-2002	Soil, Groundwater	Additional analytical data needed to determine appropriate remedial alternative, delineate horizontal and vertical extent of VOC plume	TCL VOCs, NAIPs	Monitoring well installation, groundwater sampling, soil sampling	Surficial, UCH, MCH	Two plumes identified - one extending east-northeast of Site 86 and one near Building AS513, neither plume fully delineated
Long Term Monitoring Program (Baker Environmental Inc., CH2M HILL)	1998-2005	Groundwater	Provide continued analytical data to assess whether contamination remains present, has migrated, or has degraded through natural processes	VOCs, NAIPs, Inorganics	Groundwater sampling	Surficial, UCH, MCH	LTM Optimization Report (CH2M HILL, 2005) recommended removing Site 86 from LTM program due to ongoing investigations and studies in which the LTM requirements were being met or exceeded.
Amended Remedial Investigation (CH2M HILL, Baker, CDM, 2003)	2001-2002	Soil, Groundwater	Summarize data collected after the Remedial Investigation, further delineate the nature and extent of contamination and re-evaluate impacts to human health and the environment	VOCs, field investigation of NAIPs	Soil and DPT groundwater sampling, monitoring well installation and groundwater sampling	Surficial, UCH	Showed existence of two plumes - Site 86 plume defined to extend 1,700 ft NE of Site 86 Boundary, and undefined upgradient plume assumed to be unrelated to Site 86 activities; groundwater contamination primarily due to TCE and cis-DCE, complete degradation not evident; unacceptable carcinogenic and noncarcinogenic risks were identified in the baseline risk assessment; Screening Ecological Risk Assessment recommended no further screening
Technology Evaluation (CH2M HILL, 2003)	2003	NA	Facilitate the selection of a remedial technology for pilot testing	VOCs	Focused review of the technologies that have been demonstrated to be effective for "hot spot" treatment	NA	Recommended 400 ft. long directionally drilled horizontal well to implement ozone sparging
Phase II SWMU Confirmatory Sampling Report (Baker, 2005)	2002	Soil, Groundwater	Further evaluate potential impacts to soil at SWMU 318, determine if there were any risks to groundwater as a result of potential releases at the site	VOCs, SVOCs, RCRA Metals	Soil and Groundwater Sampling	Surficial	Chlorinated solvents, PAHs, and metals exceed applicable screening criteria in soil samples. Benzene, TCE, VC, naphthalene, and arsenic exceed applicable NCGWQS. Additional investigation recommended.
RCRA Facilities Investigation (CH2M HILL, 2006a)	2004-2005	Soil, Groundwater	Characterize SWMUs 303 and 318, determine the potential for future corrective action based on risks to human health and the environment	VOCs, SVOCs, RCRA Metals	Soil sampling, DPT and existing monitoring well sampling, installation of monitoring wells, sampling newly installed monitoring wells	Surficial, UCH	Analytical results indicated the presence of contaminants in concentrations above the screening criteria, results indicate that contamination was a result of activities preceding the construction of Building AS515, the wash pad, and the SWMUs, further investigation was recommended to identify the source of the groundwater contamination at the SWMUs
Air/Ozone Sparging Pilot Study (CH2M HILL, 2006b)	2004-2006	Groundwater	Measure the effectiveness of the pilot study by examining contaminant mass removal from groundwater, minimizing contaminant mobility, and minimizing contaminant rebound	VOCs, Chloride	Construction of horizontally directionally drilled (HDD) well, installation of 12 monitoring wells within the intermediate aquifer, groundwater sampling	Surficial, UCH	TCE concentrations were reduced 99 percent in groundwater samples collected from monitoring wells with baseline concentrations exceeding 50 µg/L, air sparging beneath a low permeability layer using a HDD well resulted in a zone of influence of at least 50 feet on either side of the well, thirteen of sixteen monitoring wells achieved the NCWQS within one year, assessment of ozone sparging proved inconclusive due to the low concentration of TCE after air sparging and limited period of continuous ozone generation

Notes:

BTEX - Benzene, Toluene, Ethylbenzene, Xylenes
DRO - Diesel Range Organics
EPH - Extractable Petroleum Hydrocarbons
GRO - Gasoline Range Organics
Created By: K. Ramsey/CLT

MCH - Middle Castle Hayne
MSCCs - Maximum Soil Contaminant Concentrations
NA - Not available
NC - North Carolina
Checked By: T. Grim/CLT

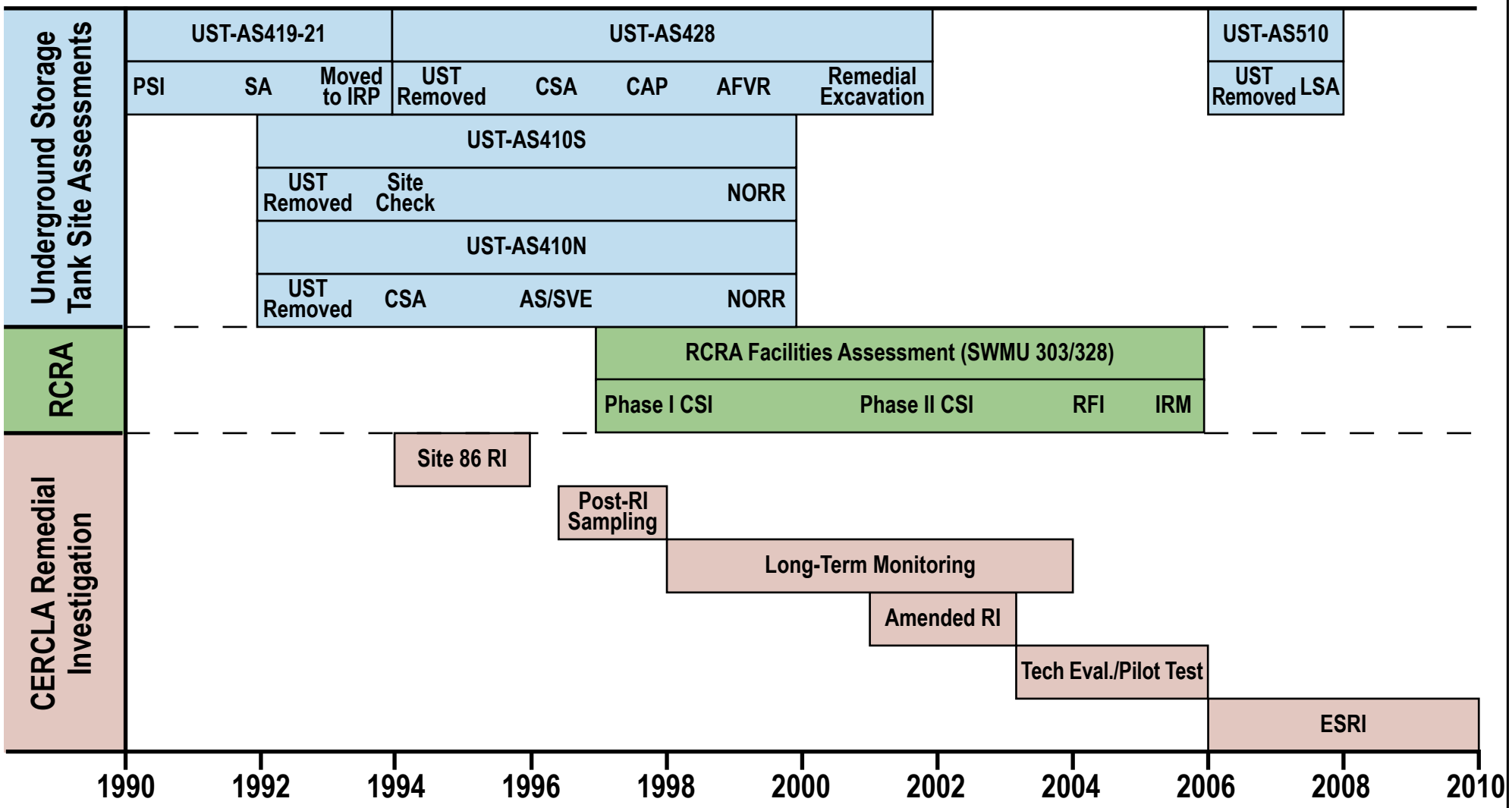
MADEP - Massachusetts Department of Environmental Protection
NAIPs- Natural Attenuation Indicator Parameters
NFA - No Further Action
PAH - Polynuclear Aromatic Hydrocarbons
RCRA - Resource Conservation and Recovery Act

TAL - Target Analyte List
TCL - Target Compound List
TPH - Total Petroleum Hydrocarbon
TCE - Trichloroethene
TDS - Total Dissolved Solids

TCLP - Toxicity Characteristic Leaching Procedure
TSS - Total Suspended Solids
SVOCs - Semivolatile Organic Compounds
VPH - Volatile Petroleum Hydrocarbons
VOCs - Volatile Organic Compounds

UCH - Upper Castle Hayne

ES051410163354MKE



NOTES:

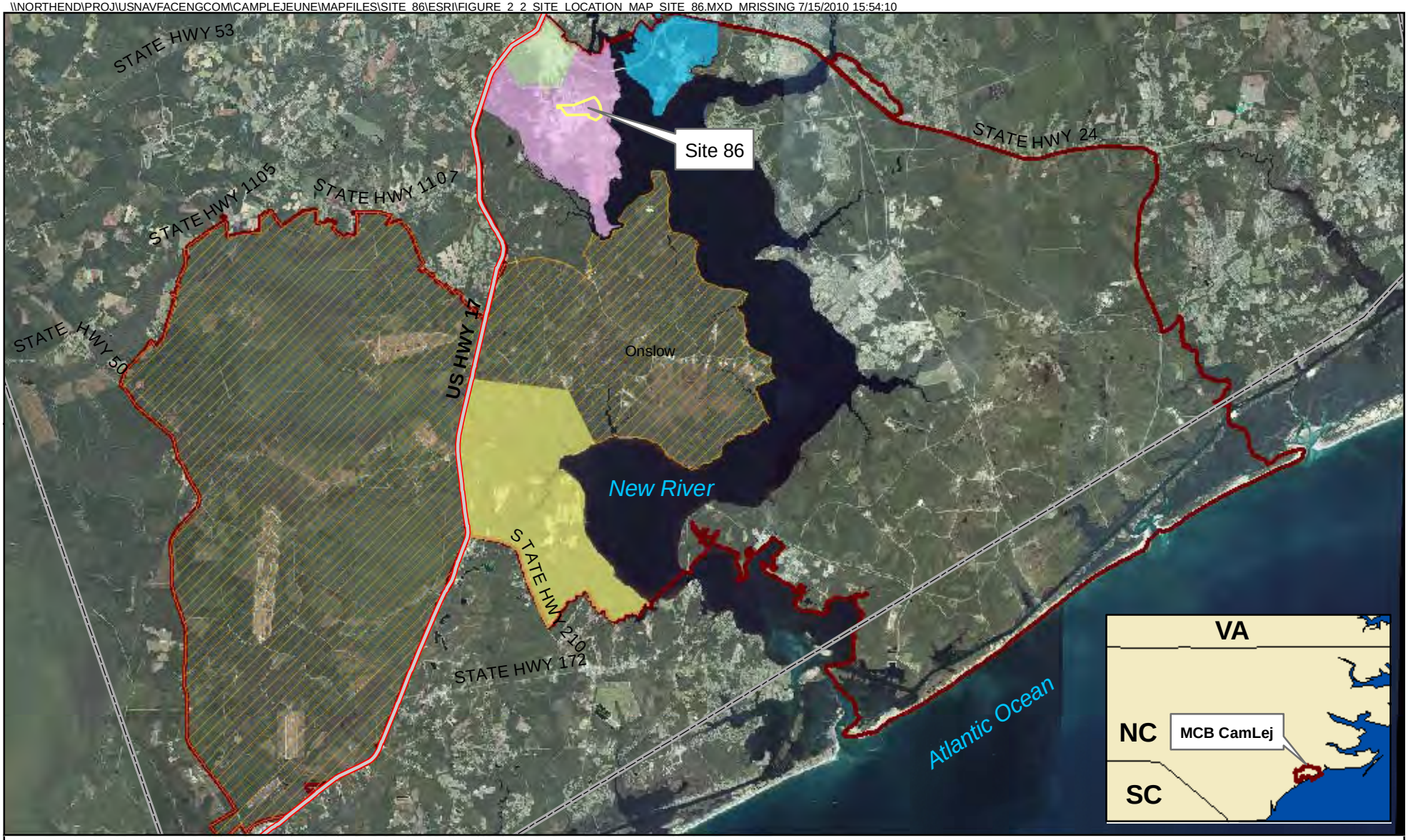
UST Underground Storage Tank
PSI Preliminary Site Investigation
SA Site Assessment
CSA Comprehensive Site Assessment
CAP Corrective Action Plan
AFVR Aggressive Fluid/Vapor Recovery
NORR Notice of Regulatory Requirement
AS/SVE Air Sparge/Soil Vapor Extraction
RCRA Resource Conservation and Recovery Act
CSI Confirmatory Sampling Investigation
RFI RCRA Facilities Investigation
IRM Interim Remedial Measures
RI Remedial Investigation
ESRI Expanded Supplemental Remedial Investigation
LSA Limited Site Assessment
SWMU Solid Waste Management Unit
CERCLA Comprehensive Environmental Response, Compensation and Liability Act
AS Air Station
IRP Installation Restoration Program

Figure 2-1
Previous Investigation Timeline
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_2_2_SITE_LOCATION_MAP_SITE_86.MXD MRISSING 7/15/2010 15:54:10



Legend

- Highways
- Greater Sandy Run Training Area
- Stone Bay Rifle Range
- Camp Geiger
- Camp Johnson
- MCAS New River
- Site 86
- Onslow County
- Installation Boundary

N

0 7,500 15,000 30,000 Feet

1 inch = 15,000 feet

Figure 2-2
Site Location Map
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_2_3_SITE_BOUNDARIES.MXD MRISSING 7/15/2010 16:01:33

Legend

- Original Site Boundary
- Site 86 Boundary (August 2006)
- Expanded Site 86 Boundary (March 2010)

N

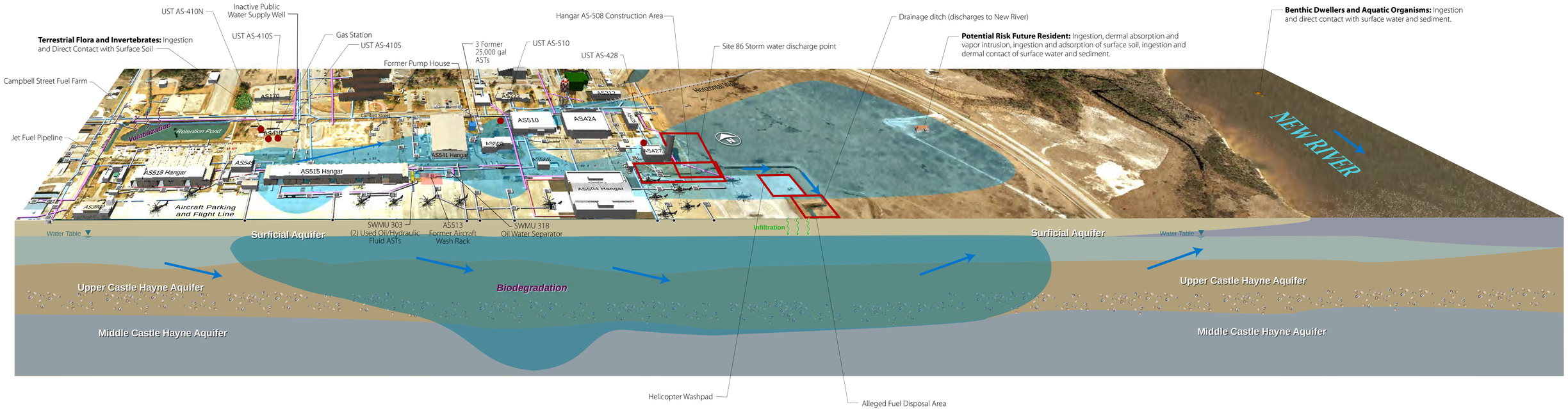
0 175 350 700 Feet

1 inch = 350 feet

Figure 2-3
Site Boundaries
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT



Legend

- Groundwater Flow Direction
- Approximate extent of Total VOCs plume
- Horizontal Well
- New Potential Source Area
- Underground Storage Tank

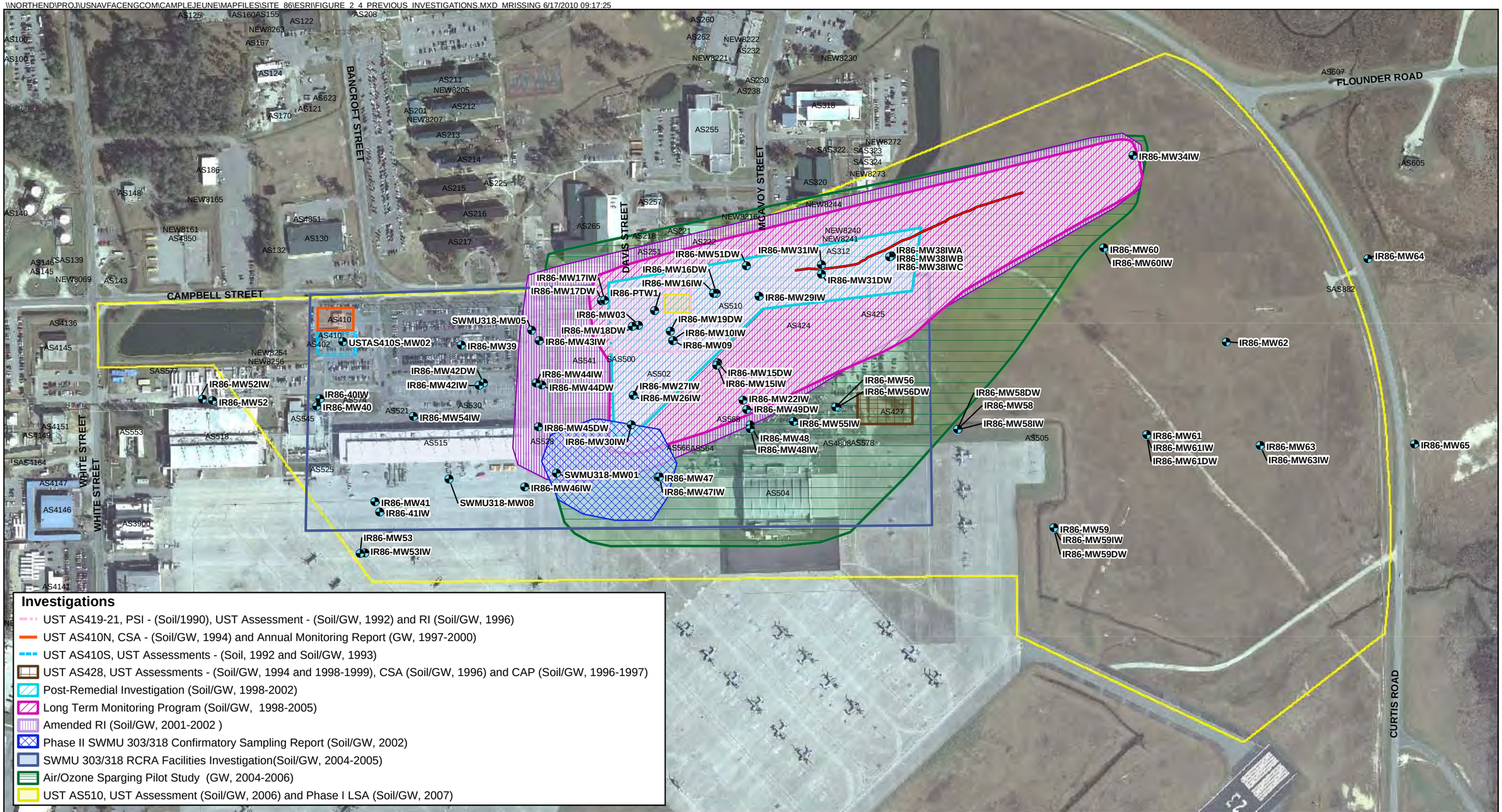
Utilities

- Stormwater Drain
- Water Line
- Wastewater Line
- Industrial Waste Collection and Treatment Facilities
- Historic Wastewater (replaced in 1998)

Note: Not to scale.

FIGURE 2-4
Conceptual Site Model
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej, North Carolina

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_2_4_PREVIOUS_INVESTIGATIONS.MXD MRISSING 6/17/2010 09:17:25



Legend

- Monitoring Well
- Horizontal Sparge Well (located approximately 60 ft bgs, installed in 2004)
- Expanded Site 86 Boundary (March 2010)

Notes:
GW – Groundwater
PSI – Preliminary Site Investigation
UST – Underground Storage Tank
RI – Remedial Investigation
CSA – Comprehensive Site Assessment
CAP – Corrective Action Plan
LSA – Limited Site Assessment
SWMU – Solid Waste Management Unit
RCRA – Resource Conservation and Recovery Act

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 2-5
Previous Investigations
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: G. Little/CLT Checked by: T. Grim/CLT

SECTION 3

Expanded Supplemental Remedial Investigation Field Activities

The ESRI field activities were conducted to define the nature and extent of impacted media at Site 86, and to update the HHRA and ERA. This section presents a summary of the field investigation sampling approach and methodologies used by CH2M HILL between April 2006 and March 2010 to complete the Site 86 ESRI. **Figure 3-1** presents a timeline of the field investigation activities completed during the investigation.

3.1 Assessment Strategy

This section provides a summary of the assessment strategy for completing the field investigations at Site 86.

3.1.1 Baseline Investigation

In August 2006, based on the results of the RFI for SWMUs 303 and 318 (CH2M HILL, 2006a), the MCB CamLej Tier I Partnering Team agreed that the boundaries of Site 86 would be expanded (**Figure 2-3**) to include the extent of VOC-impacted groundwater. Additionally, it was concluded that soil impacts identified at SWMUs 303 and 318 would be resolved under the RCRA Program and an SRI would be completed to evaluate the nature and extent of impacted media at Site 86. In order to provide baseline groundwater conditions following the completion of the air sparge Pilot Study, groundwater samples were collected and analyzed from 53 existing monitoring wells, listed in **Table 3-2** and shown in **Figure 3-2**.

3.1.2 Supplemental Remedial Investigation

The expansion of the Site 86 boundaries to encompass the extent of chlorinated solvent-impacted groundwater resulted in the inclusion of multiple potential sources of contamination not previously investigated as part of the Site 86 RI, discussed in Section 2.2. An SRI Work Plan (CH2M HILL, 2007) was prepared to outline the phased approach for completing the delineation of the vertical and horizontal extent of impacted media at Site 86. The phased approach generally consisted of the use of various screening tools to provide data quickly over a large area to identify the approximate extent of impacts and potential sources. The screening phase of the investigation was followed by the installation and sampling of permanent monitoring wells and sampling of other media using standard laboratory and field methods.

Phase I Screening (February 2007 to June 2007)

In February 2007, a passive soil gas survey was conducted to identify potential sources of VOCs within the expanded site boundary. A total of 195 passive soil gas samples were collected on a variable grid pattern, as described in Section 3.2.2 and illustrated by **Figure 3-3** and **Table 3-3.**

Two DPT borings, IR86-IS46 and IR86-IS47, were advanced to characterize lithology and to identify depths for discrete groundwater sampling activities (**Figure 3-4**). The lithologic data indicated that a layer of weakly to completely cemented sandy fossiliferous limestone was present between 40 to 60 feet bgs, with the greatest detrital content between 45 and 55 feet bgs. During the subsequent mobilization (June 2007), 18 DPT borings were advanced to 60 feet bgs or refusal, whichever was encountered first. Discrete groundwater samples were collected from the surficial aquifer (20 to 25 feet bgs), from within the shelly cemented sand portion of the upper Castle Hayne aquifer (47 to 53 feet bgs), and from the underlying silty sand of the upper Castle Hayne aquifer (55 to 60 feet bgs or refusal; see **Figure 3-4**).

Phase I Confirmation Sampling (October 2007 to December 2007)

In October and November 2007, to confirm the results of the passive soil gas and groundwater screening, CH2M HILL supervised the installation of 17 monitoring wells screened in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers (**Table 3-1** and **Figure 3-2**). Upon completion, the 17 newly installed and 21 existing monitoring wells (**Table 3-4)** were sampled to assess sitewide groundwater conditions.

This phase of investigation also included the collection of sediment and surface water samples from the western stormwater retention pond (**Tables 3-5** and **3-6**), as well as surface soil samples from exposed grass areas within the site boundary (2006 Site 86 boundary) (**Table 3-7**). **Figure 3-5** shows the sample locations.

Phase II Confirmation Sampling (June 2008)

The Phase I Confirmation Sampling event did not completely delineate the horizontal extent of impacts within the upper Castle Hayne aquifer. Consequently, five additional monitoring wells were installed at Site 86 in June 2008. Groundwater samples were collected from the five newly installed and nine existing monitoring wells (**Table 3-4**).

Phase III Screening/Confirmation Sampling (October 2008)

The results of the Phase II Confirmation Sampling indicated the presence of multiple plumes of contamination across Site 86 that had not been horizontally delineated. To ensure the horizontal delineation of the plumes was completed during Phase III of the SRI, discrete groundwater samples were collected and analyzed on an expedited laboratory turn-around schedule prior to the installation of the permanent monitoring well at each proposed location. If the discrete groundwater sample indicted that all CVOCs were below the applicable NCGWQS, then the permanent monitoring well would be installed at that location. If the discrete groundwater sample indicated the presence of CVOCs at concentrations exceeding the applicable NCGWQS, then additional discrete groundwater samples would be collected until the horizontal extent of contamination could be assessed.

In October of 2008, five DPT borings were installed and discrete groundwater samples were collected to define the horizontal extent of VOC-impacted groundwater. Samples were collected and analyzed on an expedited laboratory analysis schedule to provide data for the installation of the permanent monitoring wells, as shown in **Figure 3-4** and listed in **Table 3-4**. Based on the results of the DPT groundwater sampling, four monitoring wells screened within the upper Castle Hayne aquifer were installed in the western portion of Site 86 to complete the horizontal delineation to the west, as shown in **Figure 3-2** and listed in **Table**

3-1. Following the installation of the new monitoring wells, the four newly installed and four existing monitoring wells were sampled (**Table 3-4**).

The results of the DPT groundwater samples collected from boring IR86-IS50 (**Figure 3-4**), installed to assess the eastern extent of the VOC impacts, indicated the presence of VC concentrations greater than those detected in any of the existing monitoring wells at Site 86. This discovery suggested that an additional source of contamination may be present along the eastern edge of the flight line. The three monitoring wells proposed for this area were not installed at this time.

3.1.3 Expanded Supplemental Remedial Investigation

To investigate the apparent discovery of a new source area, east of the flight line, the SRI was expanded to include the grass area between the flight line and Curtis Road. The ESRI field activities were conducted using a phased approach similar to that used during the SRI.

Screening (October 2009)

Previous phases of investigation suggested that contaminant migration within the upper Castle Hayne aquifer was strongly influenced by a thin bed of highly transmissive partially to completely cemented fossiliferous sandy limestone that is encountered almost site-wide at a depth of approximately 45 to 55 feet bgs. Discrete groundwater samples were collected from DPT borings to evaluate depths for additional discrete groundwater sampling activities (**Figure 3-4**). Based on the results of the initial DPT groundwater samples, three intervals were identified for further investigation. Eleven additional DPT borings were advanced and discrete groundwater samples were collected to further evaluate the potential sources and extent of impacts identified in the groundwater collected from the four initial borings (**Table 3-8**). During the advancement of the DPT borings, surface and subsurface soils were also collected to evaluate potential source areas (**Tables 3-7** and **3-9**).

Confirmation Sampling (November 2009 through March 2010)

To confirm the results of the DPT groundwater screening, CH2M HILL installed 18 new monitoring wells screened in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers. Upon completion, the 18 new and 47 existing monitoring wells were sampled to assess site-wide groundwater conditions, as shown in **Figure 3-2** and listed in **Table 3-8**. In addition, to evaluate the drainage ditch receiving stormwater discharge from the flight line and Site 86 industrial area, eight sediment and six surface water samples were collected as shown in **Figure 3-5** and listed in **Tables 3-4** and **3-5**.

3.2 Sampling Methodology

The SRI and ESRI field activities described above were conducted in general accordance with the Standard Operating Procedures (SOPs) outlined in the Field Sampling Plan section of the *Master Project Plans* (MPP) (CH2M HILL, 2008a), the *Supplemental Remedial Investigation Work Plan Site 86 - Operable Unit No. 20* (CH2M HILL, 2007) and the SAP(CH2M HILL, 2009a). The general sampling methodologies used during the ESRI field investigation are summarized below.

3.2.1 Utility Clearance

Prior to any intrusive field activities, all underground utilities were located and marked by a subcontractor within a 20-foot radius of each sample location using reasonably available as-built drawings, electronic locating devices, and other means as necessary. A CH2M HILL representative accompanied the utility locator to identify sample locations.

3.2.2 Passive Soil Gas Screening Survey

A passive soil gas screening survey was conducted to identify potential source areas and supplement the conceptual site model (CSM). A total of 195 passive soil gas modules were installed at the locations shown on **Figure 3-3**. An electric drill was used to advance a borehole to approximately 3 feet bgs prior to placement of the modules. The modules were placed at the bottom of the borehole and sealed with bentonite granules. Following a residence period of at least 12 days, the modules were recovered and shipped under chain-of-custody control to Beacon Environmental Services, Inc. of Bel Air, Maryland. The samples were analyzed for VOCs by USEPA Method 8260B (**Table 3-3**) and reported semi-quantitatively in nanograms.

3.2.3 DPT Groundwater Sampling

DPT groundwater samples were collected during three mobilizations at Site 86 from June 2007 through October 2009, as presented below:

Date of Field Activities	DPT Groundwater Sample Location IDs	Depth of Groundwater Samples
June 2007	IR86-IS48 through IR86-IS50 and IR86-IS53 through IR86-IS67	22 to 27 feet bgs, 47 to 53 feet bgs, 60 to 65 feet bgs
October 2008	IR86-IS50 through IR86-IS55	40 to 60 feet bgs at 4 feet intervals
October 2009	IR86-IS101, IR86-IS102, IR86-IS109, and IR86-IS114	60 to 80 feet bgs at 10 feet intervals
October 2009	IR86-IS100, IR86-IS101, IR86-IS103, IR86-IS107, IR86-IS110, IR86-IS111, IR86-IS113, IR86-IS115 through IR86-IS120	20 to 30 feet bgs, 45 to 55 feet bgs, and 60 to 65 feet bgs

Sampling Method

Continuous soil samples were collected from each soil boring and logged according to the Unified Soil Classification System (USCS) and field-screened for VOCs by the CH2M HILL field geologist. Boring logs are provided in **Appendix B**.

The Geoprobe® DPT Screen Point 15 groundwater sampling system, consisting of a stainless steel screen (approximately 41 inches), was attached to a disposable drive cone. Once the screen was advanced to the specified sampling depth, the tooling was retracted 3 feet, exposing the screen, and groundwater samples were collected by advancing polyethylene tubing into the screen and purging groundwater with a peristaltic pump using low-flow sampling methods. New, clean tubing was used for each sampling depth and location. Once the maximum depth of each borehole was reached, the borehole was abandoned using a

grout mixture consisting of Portland cement, in accordance with NC Well Construction Standards.

Analysis

During the initial site mobilization, groundwater samples were analyzed by an onsite mobile laboratory operated by Environmental Chemistry Consulting Services, Inc. of Madison, Wisconsin (**Table 3-4**).

During subsequent sampling events, groundwater samples were collected in laboratory-supplied containers, packed on ice in a cooler, and shipped under chain-of-custody to a North Carolina-certified laboratory for VOC analysis by USEPA Method 8260 (**Table 3-4**).

3.2.4 Monitoring Well Installation

Monitoring wells were installed during the various phases of assessment conducted between 2007 and 2010 to characterize the nature and extent of groundwater impacts. A total of 16 surficial aquifer monitoring wells, 19 upper Castle Hayne aquifer monitoring wells, and 9 middle Castle Hayne aquifer monitoring wells were installed at Site 86 during the investigation. Monitoring wells were constructed using hollow stem auger (HSA), mud rotary, and rotosonic drilling methods, by licensed-North Carolina drillers.

Monitoring well construction details, including installation date, drilling method, total depth, screen interval, and top of casing elevation, are summarized in **Table 3-1** and monitoring well locations are shown on **Figure 3-2.** Boring logs, well construction diagrams, and well completion records for monitoring wells installed from 2007 to 2010 are provided in **Appendix B**.

Drilling Methodology

Rotosonic or HSA drilling methods were used to install surficial and upper Castle Hayne aquifer monitoring wells. HSA drilling included the advancement of 4¼-inch inner diameter (ID) HSAs and split spoon samplers. Split spoon soil cores were collected at 5-foot intervals from each boring, in accordance with ASTM Method D-1586, *Standard Method for Penetration Test and Split-Barrel Sampling of Soil*s, for lithologic characterization according to the USCS and field-screened for VOCs by the CH2M HILL field geologist.

The middle Castle Hayne aquifer monitoring wells were installed using either HSA/mud rotary or rotosonic drilling methods. The dual-line casing method of the rotosonic technique consists of a 4-inch diameter core barrel and multiple overriding outer casings, which are advanced using high-frequency vibration and low rotational energy. The core barrel may be advanced up to 10 feet ahead of the override casings, which are then advanced to the depth of the core barrel. The override casings provide borehole stability while the core barrel is retrieved and a continuous soil core is extruded. In its simplest form, rotosonic drilling is conducted using only the core barrel and a single, 6-inch diameter override casing. However, the drilling activities at Site 86 included override casings that were temporarily left in place while drilling continued to greater depths. In this manner, the shallower portions of the aquifer were effectively isolated from the borehole, thereby reducing the potential for cross-contamination during drilling activities. Six-inch ID Schedule 80 polyvinyl chloride (PVC) isolation casings were used with the mud rotary drilling method and an outer 8-inch ID steel drill casing was used with the rotosonic drilling method.

Well Construction

Monitoring wells were constructed using 2-inch ID Schedule 40 PVC screen and riser. The surficial aquifer monitoring wells were constructed with 10 to 15 feet of 0.010-inch machine slotted screen, while the upper and middle Castle Hayne aquifer monitoring wells were constructed with 5 to 10 feet of 0.010-inch machine slotted screens. The annular space surrounding the well screens was filled with 20-30 grade silica sand followed by a bentonite seal of approximately 5-foot thickness. A watertight, locking expansion cap was installed on top of the 2-inch diameter casing. Monitoring wells were completed at the surface using a steel flush-mount manhole protective cover with a 2-foot by 2-foot concrete pad. Monitoring wells installed within the flight line were installed with boltless locking manhole covers. All monitoring wells were surveyed as described in Section 3.2.14.

A watertight cap was placed on the PVC pipe and the wells were marked. Monitoring well construction diagrams are provided in **Appendix B**.

3.2.5 Monitoring Well Development

Each monitoring well was developed by surging and over-pumping with a submersible pump across the entire length of the well screen. Well development was generally considered complete when the pump discharge was free of visible sediment, and the water quality parameters (pH, conductivity, dissolved oxygen [DO], oxidation-reduction potential [ORP], and temperature) stabilized to within 10 percent of one another, with the exception of turbidity. Turbidity was reduced to the extent practicable. All development fluids were containerized and managed as investigation-derived waste (IDW) in accordance with the Base Master Waste Management Plan (CH2M HILL, 2008a).

3.2.6 Groundwater Sampling

Groundwater samples were collected using low-flow sampling techniques in accordance with CLEAN SOPs. From 2006 through 2008, groundwater sampling was conducted using a peristaltic pump and during 2009 and 2010, groundwater sampling was conducted using a pneumatic bladder pump. Prior to sampling, new disposable polyethylene (PE) tubing (peristaltic pump) or the bladder pump sample intake was advanced down each monitoring well to the middle of the screened interval and groundwater was purged at a low flow rate (between 0.3 and 0.5 liter per minute). New PE tubing and bladder pump components were used to collect each sample and were replaced after each use. Bladder pumps were decontaminated after each use, as described in Section 3.2.12.

During well purging, water quality parameters (specific conductance, pH, turbidity, temperature, DO, and ORP) and depth to water level measurements were recorded (approximately every 5 to 10 minutes) to monitor compliance with stabilization criteria prior to sample collection. Groundwater samples were collected after a minimum of one well volume had been purged and the water quality parameters had stabilized for three consecutive readings, and if drawdown did not exceed 5 percent of the static water column. Parameters were considered stabilized when three successive readings were as follows:

- pH within 0.1 pH unit
- Temperature within 10 percent
- Conductivity within 3 percent

If water quality parameters did not stabilize or drawdown exceeded 5 percent of the static water column, at least three well volumes were purged prior to sampling. If purging resulted in the well going dry, the well was allowed time to recharge and the sample was collected. Water quality parameters recorded at the completion of each well purge during the 2009/2010 groundwater monitoring event are provided in **Tables 3-10** through **3-12**. Groundwater purge forms are provided in **Appendix C**.

Target analytes with short holding times (ferrous iron, nitrate and nitrite) were analyzed in the field using HACH™ test kits. The concentrations indicated by the HACH™ kits were recorded on the groundwater purge forms for the 2009/2010 groundwater monitoring event (**Appendix C** and **Tables 5-8** through **5-10**).

Groundwater samples were collected in appropriately labeled containers, immediately packed on ice in coolers, and shipped under chain-of-custody to a North Carolina-certified laboratory. Details of the specific laboratories and analytical methods used during each monitoring event are provided in **Tables 3-2, 3-4,** and **3-8**.

3.2.7 Surface Soil Sampling

In December 2007, 10 surface soil samples (IR86-SS01 through IR86-SS10) were collected from unpaved surfaces (i.e., grass, gravel, or bare soil) within the industrial area of Site 86. In October 2009, 15 surface soil samples (IR86-SS100 through IR86-SS114) were collected from the northeast grass area. All surface soil sample locations used during the ESRI are shown on **Figure 3-5**.

Surface soil samples were collected with a decontaminated stainless-steel scoop or trowel from a depth of 0 to 6 inches bgs. The top layer of soil was first removed and discarded. The portion of the sample intended for VOC analysis was collected prior to sample homogenization, and placed directly into Terra Core™ soil samplers with in-field preservation. The remaining sample volume was placed in a stainless-steel bowl, then homogenized, divided into quarters, and placed in laboratory-supplied containers, using equal amounts of sample material alternately from each quarter section.

Surface soil samples were immediately packed on ice in coolers and shipped under chain-of-custody control to a North Carolina-certified laboratory for analysis of VOCs, SVOCs, pesticides, PCBs, and TAL metals by the methods listed in **Table 3-7.**

3.2.8 Subsurface Soil Sampling

Subsurface soil samples were collected from each of the 15 DPT borings advanced during the October 2009 assessment activities using a hand auger (**Figure 3-5**). Each soil boring was logged for lithologic descriptions according to the USCS and field-screened for VOCs by the CH2M HILL field geologist.

Based on the results of the field screening, one subsurface soil sample was collected from each boring in the unsaturated zone above the water table (typically 4-5 feet bgs). If no elevated FID readings were measured, the subsurface soil sample was collected from the unsaturated zone approximately 1 foot above the water table. Subsurface soil samples were submitted to Shealy Environmental Services for analysis of VOCs, SVOCs, PAHs, PCBs, pesticides, and TAL metals by the methods listed in **Table 3-9.**

3.2.9 Surface Water Sampling

In December 2007, three surface water samples (IR86-SW01 through IR86-SW03) were collected from the western stormwater retention pond (**Figure 3-5**). In June 2008, additional samples were collected at two of the three surface water sample locations (IR86-SW01 and IR86-SW02). In November 2009, six surface water samples (IR86-SW105, IR86-SW106, IR86-SW108, IR86-SW110, IR86-SW112, and IR86-SW113) were collected from the drainage ditch along the eastern edge of the flight line (**Figure 3-5**).

Surface water samples were collected using a pond extension sampler, which contained a sample bottle. Samples were collected by transferring the water from the sample bottle into laboratory-supplied bottleware. All sample vials were filled completely and capped to prevent the entrapment of air bubbles in the vial.

During the 2009 sampling event, water quality parameters (e.g., DO, temperature, specific conductance, salinity, hardness, and pH) were measured prior to sample collection with a water quality meter and chemical-specific HACH™ kits.

Surface water samples were collected in appropriately labeled containers and immediately packed on ice in coolers and shipped under chain-of-custody control to a North Carolina-certified laboratory analysis of VOCs, SVOCs, pesticides, PCBs, and metals by the methods listed in **Table 3-6**.

3.2.10 Sediment Sampling

In June 2008, two sediment samples were collected from the western stormwater retention pond. Eight sediment samples were also collected from the drainage ditch located along the eastern edge of the flight line in November 2009. In March 2010, an additional sediment sample was collected from each of the locations previously sampled in November 2009 for analysis of pesticides. Samples had to be recollected because of a laboratory oversight (**Figure 3-5**).

During the 2008 sampling activities, a Ponar dredge was lowered into the retention pond until sediments were encountered. Any surface water entrapped in the sampler was slowly decanted through a screened port on the top of the dredge sampler. Samples were collected by transferring the sediment from the dredge sampler into laboratory-supplied bottleware.

During the 2009/2010 sampling activities, sediment samples were collected from 0 to 0.5 foot bgs from the drainage ditch. Samples were collected using stainless-steel spoons/spatulas, dredge sampler, hand auger, or trowel depending on the specific conditions.

Care was taken to ensure that preservatives were not rinsed from the bottleware during sample collection**.** Sediment samples were collected in appropriately labeled containers and immediately packed on ice in coolers and shipped under chain-of-custody control to a North Carolina-certified laboratory**.** The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals, by the methods listed in **Table 3-5.**

3.2.11 Aquifer Testing

On October 29 and 30, 2008, slug tests were performed on monitoring wells IR86-MW38IWC, IR86-MW44IW, and IR86-MW44DW to characterize aquifer parameters (**Figure**

3-2). Monitoring wells were selected to provide hydrogeologic data from the upper and middle Castle Hayne aquifers and particularly differences in hydraulic conductivity between the shelly cemented sand unit of the upper Castle Hayne aquifer and the underlying silty sand portions of the upper and middle Castle Hayne aquifers.

Slug Tests

Slug tests were performed on IR86-MW38IWC using a slug, consisting of a 4-foot length of 1.25-inch outer diameter sand-filled PVC pipe, sealed at both ends. Slug tests were performed on IR86-38IWC by rapidly introducing or removing the slug from the water column within the monitoring well.

Pneumatic slug tests were performed on IR86-MW44DW and IR86-MW44IW. After measuring and recording the depth to groundwater, pneumatic slug tests were conducted by mounting the pneumatic level depressor onto the well casing. Air was manually pumped into the well to depress the static water level within the well. A pressure gauge mounted on the pneumatic level depressor, with units of inches of water, was used to verify that the system was air-tight. The air pressure was released to the atmosphere via the ball valve on the pneumatic water level depressor.

For each type of slug test, a pressure transducer was installed in the monitoring well and was connected to a personal digital assistant. The pressure transducer recorded temperature, barometric pressure, and water level data.

The nearly instantaneous loss of volume as the slug was removed from the well casing allowed the static water level to instantaneously drop. Water levels immediately began to rise as water entered the well from the aquifer. Water levels were recorded via the transducer until they returned to static conditions.

The resulting slug test data were evaluated using the Bouwer and Rice (1976) solution for monitoring wells screened in unconfined conditions. The slug test data are provided in **Appendix D** and discussed in Section 4.

Aquifer Pumping Test

The purpose of the constant rate aquifer pumping test was to assess the hydrogeologic properties of the surficial and upper Castle Hayne aquifers, and to support development of a groundwater flow model.

On October, 28 2009, a pumping test well (IR86-PTW-1) was installed within the original Site 86 boundary (**Figure 3-2)**. The location of the well was selected based on several existing monitoring wells (IR86-MW03, IR86-MW04IW, IR86-MW05, IR86-MW06IW, IR86-MW16IW, IR86-MW17IW, IR86-MW18DW, and IR86-MW50IW) that could be used as observation points during the test. The screened interval was based on the lithology observed during well installation and the hypothesis that a partially to completely cemented sandy limestone layer encountered at this depth represented a more transmissive layer within the upper Castle Hayne aquifer. The pumping test well was screened from 45 to 55 feet bgs using 4-inch ID, 0.020-inch slotted high flow screen.

A 4-inch, 2-horsepower Grundfos Rediflo submersible pump was installed at 47.5 ft bgs. A 30-pound-per-square-inch (psi) pressure transducer was placed approximately 34 feet into the water column. The pressure transducer was placed inside a section of open-ended 1-inch

diameter Schedule 40 PVC pipe to reduce vibrations from the 4-inch Rediflo pump. The pump discharge line was plumbed to a 240-gallon poly tank and activated carbon vessels, which ultimately discharged to the sanitary sewer system. Lastly, the eight observation wells were equipped with a 30-psi mini-troll and programmed to record water level measurements during the pumping and recovery phases of the test.

On January 13, 2010, a constant-rate aquifer pumping test was performed on well IR86-PTW-1. Before the test began, static water levels were measured and recorded from each of the observation wells and the pumping test well. A pumping rate of 8.1 gallons per minute (gpm) was sustained for a period of 7.7 hours. At the end of the pumping test, the water column recovery in monitoring wells IR86-PTW-1, IR86-MW6IW, and IR86-MW18DW was manually recorded to truth the data logged by the pressure transducers. The pumping test data and solutions are provided in **Appendix D.**

3.2.12 Decontamination

Submersible pumps, water level meters, and water quality instrumentation were decontaminated in accordance with the Base MPP (CH2M HILL, 2008a) and SAP (CH2M HILL, 2009a). Equipment was rinsed with phosphate-free detergent and tap water followed by a 10 percent methanol solution rinse, tap water, and final deionized water rinse. Decontaminated equipment was placed in PE bags or wrapped in aluminum foil. All rinsate and other decontamination materials (plastic sheeting, tubing, etc.) were placed in Department of Transportation (DOT)-approved 55-gallon drums, pending disposal.

3.2.13 IDW Management

All IDW generated during the field activities at Site 86 was containerized in DOT-approved 55-gallon steel drums. In accordance with the MPP (CH2M HILL, 2008a), IDW was staged at a central, vehicle-accessible location, designated by MCAS New River officials, for each sampling event. Soil cuttings, drilling fluids, and other liquids were containerized separately. The IDW generated during the ESRI field activities was found to be non-hazardous and was disposed of offsite at an approved facility.

3.2.14 Site Survey

All newly installed wells and selected existing monitoring wells were surveyed by a North Carolina-licensed land surveyor. The locations were referenced both horizontally and vertically to permanent land monuments or a grid system. The survey controls were tied to a benchmark, the 1983 North American Datum (NAD), and the North American Vertical Datum (NAVD) of 1988. Ground surface and monitoring well top of casing vertical control were surveyed to the nearest 0.01 foot, and the horizontal control was to the nearest 0.10 foot. Each monitoring well top of casing was notched or otherwise marked to identify a constant measuring point for measuring depths to groundwater.

TABLE 3-1
Summary of Monitoring Well Construction Details
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well Identification	Northing Coordinate	Easting Coordinate	Top of Casing (ft msl)	Ground Elevation (ft msl)	Well Diameter (in)	Well Depth (ft)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Aquifer	Installation Date	Drilling Method
SRI Phase I Confirmation Sampling Event											
IR86-MW48	3844468.233	276280.1153	17.10	17.69	2	30	20	30	surficial	10/30/2007	HSA
IR86-MW48IW	3844463.862	276280.2138	17.55	17.94	2	50	45	50	UCH	10/30/2007	HSA
IR86-MW43IW	3844563.187590	276042.280060	17.78	18.18	2	50	45	50	UCH	10/31/2007	HSA
IR86-MW50IW	3844611.114450	276169.459030	17.07	17.44	2	50	45	50	UCH	11/1/2007	HSA
IR86-MW44IW	3844515.443380	276038.596230	18.21	18.41	2	50	45	50	UCH	11/2/2007	HSA
IR86-MW49DW	3844485.815670	276276.191080	17.17	17.56	2	95	90	95	MCH	11/5/2007	Mud Rotary
IR86-MW47	3844409.688550	276176.239910	18.10	18.06	2	30	20	30	surficial	11/6/2007	HSA
IR86-MW47IW	3844409.516500	276177.930200	18.14	18.36	2	50	45	50	UCH	11/6/2007	HSA
IR86-MW40	3844489.676	275790.8756	19.51	19.66	2	30	20	30	surficial	11/7/2007	HSA
IR86-MW41	3844382.314	275857.2309	16.98	17.27	2	30	20	30	surficial	11/7/2007	HSA
IR86-MW39	3844558.697730	275954.626300	18.72	18.99	2	30	20	30	surficial	11/8/2007	HSA
IR86-MW42IW	3844512.551220	275974.250480	17.44	17.91	2	50	45	50	UCH	11/8/2007	HSA
IR86-MW46IW	3844398.610440	276026.038850	17.69	17.93	2	50	45	50	UCH	11/9/2007	HSA
IR86-MW42DW	3844515.850450	275979.242670	17.39	17.81	2	95	90	95	MCH	11/14/2007	Mud Rotary
IR86-MW51DW	3844647.268000	276275.921000	15.87	16.05	2	95	90	95	MCH	11/16/2007	Mud Rotary
IR86-MW44DW	3844513.497680	276045.209130	18.09	18.49	2	95	90	95	MCH	11/17/2007	Mud Rotary
IR86-MW45DW	3844466.162020	276041.108060	18.22	18.58	2	95	90	95	MCH	11/18/2007	Mud Rotary
SRI Phase II Confirmation Sampling Event											
IR86-MW54IW	3844483.248	275893.8547	15.76	16.09	2	45	40	45	UCH	6/3/2008	HSA
IR86-MW55IW	3844471.906	276339.0060	16.67	17.17	2	45	40	45	UCH	6/4/2008	HSA
IR86-MW52	3844495.193	275659.0482	18.31	18.58	2	30	20	30	surficial	6/5/2008	HSA
IR86-MW53	3844326.964690	275842.957582	19.05	17.99	2	30	20	30	surficial	6/5/2008	HSA
IR86-MW56IW	3844450.006840	276412.522826	17.77	17.71	2	45	40	45	UCH	6/6/2008	HSA
SRI Phase III Confirmation Sampling Event											
IR86-MW40IW	3844489.664	275792.4100	19.36	19.56	2	44	39	44	UCH	10/24/2008	HSA
IR86-MW41IW	3844375.185*	275864.8295*	NA*	17.74*	2	45	40	45	UCH	10/25/2008	HSA
IR86-MW53IW	3844337.77*	275876.4304*	NA*	18.57*	2	50	45	50	UCH	10/26/2008	HSA
IR86-MW52IW	3844494.592	275658.8029	18.04	18.49	2	48	43	48	UCH	10/27/2008	HSA

TABLE 3-1
Summary of Monitoring Well Construction Details
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well Identification	Northing Coordinate	Easting Coordinate	Top of Casing (ft msl)	Ground Elevation (ft msl)	Well Diameter (in)	Well Depth (ft)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Aquifer	Installation Date	Drilling Method
ESRI Confirmation Sampling Event											
IR86-PTW-1	3844597.293780	276172.583137	16.04	16.35	2	55	45	55	UCH	10/27/2009	Rotosonic
IR86-MW60	3844667.307000	276678.888000	12.430	12.72	2	35	25	35	surficial	11/4/2009	Rotosonic
IR86-MW60IW	3844667.307000	276678.888000	12.333	12.73	2	55	45	55	UCH	11/4/2009	Rotosonic
IR86-MW64	3844655.290250	276977.333725	7.203	7.53	2	35	25	35	surficial	11/5/2009	Rotosonic
IR86-MW56	3844487.959480	276376.755736	15.430	15.68	2	35	25	35	surficial	11/6/2009	Rotosonic
IR86-MW56DW	3844487.758020	276378.496718	15.275	15.63	2	90	80	90	MCH	11/6/2009	Rotosonic
IR86-MW58DW	3844463.337240	276514.348105	16.971	17.38	2	91	81	91	MCH	11/7/2009	Rotosonic
IR86-MW59	3844352.632000	276622.778000	12.097	12.59	2	35	25	35	surficial	11/8/2009	Rotosonic
IR86-MW59DW	3844352.632000	276622.778000	12.176	12.55	2	90	80	90	MCH	11/8/2009	Rotosonic
IR86-MW59IW	3844352.628000	276622.777000	12.411	12.68	2	56	46	56	UCH	11/8/2009	Rotosonic
IR86-MW58	3844463.337000	276514.348000	16.831	17.44	2	35	25	35	surficial	11/23/2009	Rotosonic
IR86-MW58IW	3844463.055400	276515.030034	16.887	17.37	2	55	45	55	UCH	11/23/2009	Rotosonic
IR86-MW62	3844561.910000	276817.649000	13.040	13.38	2	35	25	35	surficial	12/1/2009	Rotosonic
IR86-MW63	3844445.139160	276855.561898	12.148	12.52	2	36	26	36	surficial	12/1/2009	Rotosonic
IR86-MW63IW	3844445.139000	276855.561000	12.206	12.55	2	56	46	56	UCH	12/1/2009	Rotosonic
IR86-MW61IW	3844457.271000	276727.417000	12.794	13.21	2	55	45	55	UCH	12/2/2009	Rotosonic
IR86-MW61	3844457.271000	276727.417000	12.609	13.05	2	35	25	35	surficial	12/4/2009	Rotosonic
IR86-MW61DW	3844457.271000	276727.417000	12.947	13.28	2	90	80	90	MCH	12/4/2009	Rotosonic
IR86-MW65	3844446.720000	277029.778731	8.59	8.85	2	20	10	20	surficial	3/18/2010	Rotosonic
IR86-MW66IW	3844818.559	276874.4240	7.63	7.87	2	55	10	55	UCH	6/1/2010	HSA

Notes:

The horizontal datum for this survey is the North American Datum of 1983 (NAD83-2007)
The vertical datum for this survey is the North American Vertical Datum of 1988(NAVD88)
The horizontal coordinate system used during the survey was the State Plane Coordinate System of North Carolina (SPC NC). Coordinates have been converted to Universal Transverse Mercator (UTM
ft bgs - Feet below ground surface
ft msl - Feet above mean sea level
HSA - Hollow-stem auger
MCH - Middle Castle Hayne
NM - Not measured
UCH- Upper Castle Hayne
* Wells covered over by concrete, elevations are for ground surface only.

Generated By: L. Petty/CLT Checked By: T.Grim/CLT

TABLE 3-2
Laboratory Analytical Methods - Baseline Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B, EPA OLM-V-LOW)	Alkalinity (2320B)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (4500_S_D)	MEE (EPA RSK-175)	Ferric Iron (3500_FE_D)	Ferrous iron (3500_FE_D)	TOC (EPA 415.1)	Iron (EPA 6010B)
Baseline Investigation (2006)											
IR86-AS428-MW05	IR86-AS428-GW05-06B	X	X	X		X	X	X	X	X	X
IR86-MW01	IR86-GW01-06B	X	X	X		X	X	X	X	X	X
IR86-MW02IW	IR86-GW02IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW03	IR86-GW03-06B	X	X	X		X	X	X	X	X	X
IR86-MW04IW	IR86-GW04IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW04IW	IR86-GW04IW-06B-DUP	X	X	X		X	X	X	X	X	X
IR86-MW05	IR86-GW05-06B	X	X	X		X	X	X	X	X	X
IR86-MW06IW	IR86-GW06IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW07	IR86-GW07-06B	X	X	X		X	X	X	X	X	X
IR86-MW08IW	IR86-GW08IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW09	IR86-GW09-06B	X	X	X		X	X	X	X	X	X
IR86-MW10IW	IR86-GW10IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW11	IR86-GW11-06B	X	X	X		X	X	X	X	X	X
IR86-MW12IW	IR86-GW12IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW13	IR86-GW13-06B	X	X	X		X	X	X	X	X	X
IR86-MW14IW	IR86-GW14IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW15DW	IR86-GW15DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW15IW	IR86-GW15IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW16DW	IR86-GW16DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW16DW	IR86-GW16DW-06BDUP	X	X	X		X	X	X	X	X	X
IR86-MW16IW	IR86-GW16IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW17DW	IR86-GW17DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW17IW	IR86-GW17IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW18DW	IR86-GW18DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW19DW	IR86-GW19DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW20IW	IR86-GW20IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW21IW	IR86-GW21IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW22IW	IR86-GW22IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW23IW	IR86-GW23IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW23IW	IR86-GW23IW-06BDUP	X	X	X		X	X	X	X	X	X
IR86-MW24IW	IR86-GW24IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW25IW	IR86-GW25IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW26IW	IR86-GW26IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW27IW	IR86-GW27IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW28IW	IR86-GW28IW-06A	X	X	X		X	X	X	X	X	
IR86-MW28IW	IR86-GW28IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW28IW	IR86-GW28IW-P-06A	X	X	X		X	X	X	X	X	
IR86-MW29IW	IR86-GW29IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW30IW	IR86-GW30IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW30IW	IR86-GW30IW-06BDUP	X	X	X		X	X	X	X	X	X
IR86-MW31DW	IR86-GW31DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW31IW	IR86-GW31IW-06A	X	X	X		X	X	X	X	X	

TABLE 3-2
Laboratory Analytical Methods - Baseline Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B, EPA OLM-V-LOW)	Alkalinity (2320B)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (4500_S_D)	MEE (EPA RSK-175)	Ferric Iron (3500_FE_D)	Ferrous iron (3500_FE_D)	TOC (EPA 415.1)	Iron (EPA 6010B)
IR86-MW31IW	IR86-GW31IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW32IW	IR86-GW32IW-06A	X	X	X		X	X	X	X	X	
IR86-MW32IW	IR86-GW32IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW33DW	IR86-GW33DW-06B	X	X	X		X	X	X	X	X	X
IR86-MW33DW	IR86-GW33DW-06BDUP	X	X	X		X	X	X	X	X	X
IR86-MW33IW	IR86-GW33IW-06A	X	X	X		X	X	X	X	X	
IR86-MW33IW	IR86-GW33IW-06B	X	X	X		X	X	X	X	X	
IR86-MW34IW	IR86-GW34IW-06B	X	X	X		X	X	X	X	X	X
IR86-MW35IWA	IR86-GW35IWA-06A	X			X						
IR86-MW35IWA	IR86-GW35IWA-06B	X			X						
IR86-MW35IWB	IR86-GW35IWB-06A	X			X						
IR86-MW35IWB	IR86-GW35IWB-06B	X			X						
IR86-MW35IWC	IR86-GW35IWC-06A	X			X						
IR86-MW35IWC	IR86-GW35IWC-06B	X			X						
IR86-MW35IWC	IR86-GW35IWCP-06A	X			X						
IR86-MW36IWA	IR86-GW36IWA-06A	X			X						
IR86-MW36IWA	IR86-GW36IWA-06B	X			X						
IR86-MW36IWB	IR86-GW36IWB-06A	X			X						
IR86-MW36IWB	IR86-GW36IWB-06B	X			X						
IR86-MW36IWB	IR86-GW36IWBD-06B	X			X						
IR86-MW36IWC	IR86-GW36IWC-06A	X			X						
IR86-MW36IWC	IR86-GW36IWC-06B	X			X						
IR86-MW37IWA	IR86-GW37IWA-06A	X			X						
IR86-MW37IWA	IR86-GW37IWA-06B	X			X						
IR86-MW37IWA	IR86-GW37IWAD-06B	X			X						
IR86-MW37IWB	IR86-GW37IWB-06A	X			X						
IR86-MW37IWB	IR86-GW37IWB-06B	X			X						
IR86-MW37IWC	IR86-GW37IWC-06A	X			X						
IR86-MW37IWC	IR86-GW37IWC-06B	X			X						
IR86-MW38IWA	IR86-GW38IWA-06A	X			X						
IR86-MW38IWA	IR86-GW38IWA-06B	X			X						
IR86-MW38IWB	IR86-GW38IWB-06A	X			X						
IR86-MW38IWB	IR86-GW38IWB-06B	X			X						
IR86-MW38IWC	IR86-GW38IWC-06A	X			X						
IR86-MW38IWC	IR86-GW38IWC-06B	X			X						

Notes:

CNNS - Chloride, nitrate, nitrite, sulfate
MEE - Methane, ethane, ethene
TOC - Total organic carbon
VOC - Volatile organic compounds
Laboratory analysis provided by Mitkem Corporation

Generated By: D. Brown/CLT Checked By: T.Grim/CLT

TABLE 3-3
Laboratory Analytical Methods - Passive Soil Gas Screening Survey
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG001	X
IR86-SG002	X
IR86-SG003	X
IR86-SG004	X
IR86-SG005	X
IR86-SG006	X
IR86-SG007	X
IR86-SG008	X
IR86-SG009	X
IR86-SG010	X
IR86-SG011	X
IR86-SG012	X
IR86-SG013	X
IR86-SG014	X
IR86-SG016	X
IR86-SG017	X
IR86-SG018	X
IR86-SG019	X
IR86-SG021	X
IR86-SG022	X
IR86-SG023	X
IR86-SG024	X
IR86-SG025	X
IR86-SG026	X
IR86-SG027	X
IR86-SG028	X
IR86-SG029	X
IR86-SG030	X
IR86-SG031	X
IR86-SG032	X
IR86-SG033	X
IR86-SG034	X
IR86-SG035	X
IR86-SG036	X
IR86-SG037	X
IR86-SG038	X

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG070	X
IR86-SG071	X
IR86-SG072	X
IR86-SG073	X
IR86-SG074	X
IR86-SG075	X
IR86-SG076	X
IR86-SG077	X
IR86-SG078	X
IR86-SG079	X
IR86-SG080	X
IR86-SG081	X
IR86-SG082	X
IR86-SG083	X
IR86-SG084	X
IR86-SG085	X
IR86-SG086	X
IR86-SG087	X
IR86-SG088	X
IR86-SG089	X
IR86-SG090	X
IR86-SG091	X
IR86-SG092	X
IR86-SG093	X
IR86-SG094	X
IR86-SG095	X
IR86-SG096	X
IR86-SG097	X
IR86-SG098	X
IR86-SG099	X
IR86-SG101	X
IR86-SG102	X
IR86-SG103	X
IR86-SG104	X
IR86-SG105	X
IR86-SG106	X

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG141	X
IR86-SG142	X
IR86-SG143	X
IR86-SG144	X
IR86-SG145	X
IR86-SG146	X
IR86-SG147	X
IR86-SG148	X
IR86-SG149	X
IR86-SG150	X
IR86-SG151	X
IR86-SG152	X
IR86-SG153	X
IR86-SG154	X
IR86-SG155	X
IR86-SG156	X
IR86-SG157	X
IR86-SG158	X
IR86-SG159	X
IR86-SG160	X
IR86-SG161	X
IR86-SG162	X
IR86-SG163	X
IR86-SG165	X
IR86-SG166	X
IR86-SG167	X
IR86-SG168	X
IR86-SG169	X
IR86-SG170	X
IR86-SG171	X
IR86-SG172	X
IR86-SG173	X
IR86-SG174	X
IR86-SG175	X
IR86-SG176	X
IR86-SG177	X

TABLE 3-3
Laboratory Analytical Methods - Passive Soil Gas Screening Survey
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG039	X
IR86-SG040	X
IR86-SG041	X
IR86-SG042	X
IR86-SG043	X
IR86-SG044	X
IR86-SG045	X
IR86-SG046	X
IR86-SG047	X
IR86-SG048	X
IR86-SG049	X
IR86-SG050	X
IR86-SG051	X
IR86-SG052	X
IR86-SG053	X
IR86-SG054	X
IR86-SG055	X
IR86-SG056	X
IR86-SG057	X
IR86-SG058	X
IR86-SG059	X
IR86-SG060	X
IR86-SG061	X
IR86-SG062	X
IR86-SG063	X
IR86-SG065	X
IR86-SG066	X
IR86-SG067	X
IR86-SG068	X
IR86-SG069	X

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG107	X
IR86-SG108	X
IR86-SG109	X
IR86-SG110	X
IR86-SG111	X
IR86-SG112	X
IR86-SG114	X
IR86-SG115	X
IR86-SG116	X
IR86-SG117	X
IR86-SG118	X
IR86-SG119	X
IR86-SG120	X
IR86-SG121	X
IR86-SG122	X
IR86-SG123	X
IR86-SG125	X
IR86-SG126	X
IR86-SG127	X
IR86-SG128	X
IR86-SG129	X
IR86-SG130	X
IR86-SG132	X
IR86-SG133	X
IR86-SG134	X
IR86-SG135	X
IR86-SG136	X
IR86-SG137	X
IR86-SG138	X
IR86-SG140	X

Station ID	Soil Gas VOC (EPA 8260B)
SRI (Phase I Screening)	
IR86-SG179	X
IR86-SG180	X
IR86-SG181	X
IR86-SG182	X
IR86-SG183	X
IR86-SG184	X
IR86-SG185	X
IR86-SG186	X
IR86-SG187	X
IR86-SG188	X
IR86-SG189	X
IR86-SG190	X
IR86-SG191	X
IR86-SG192	X
IR86-SG193	X
IR86-SG194	X
IR86-SG195	X
IR86-SG196	X
IR86-SG197	X
IR86-SG198	X
IR86-SG199	X
IR86-SG200	X
IR86-SG201	X
IR86-SG202	X
IR86-SG203	X
IR86-SG204	X

Note:
Laboratory Analysis performed by Beacon Environmental Services, Inc.
VOC - Volatile organic compounds

Generated By: K. Ramsey/CLT
Checked By: T. Grim/CLT

TABLE 3-4
Laboratory Analytical Methods - Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOA (EPA 8260B, EPA OLM-V, EPA SOM01_V_TRACE)	Iron/Manganese (EPA 6010B, EPA ILM05-MET)	Alkalinity (EPA 2320B, EPA 310.2)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (EPA 4500_S_D, EPA 376.1)	MEE (EPA RSK-175)	Ferric Iron (EPA 3500_FE_D)	Ferrous Iron (EPA 3500_FE_D)	TOC (EPA 9060)
Supplemental RI - Phase I Screening (February 2007 - June 2007)											
IR86-IS48	IR86-GW-IS48-22-27-07B	X									
IR86-IS48	IR86-GW-IS48-47-53-07B	X									
IR86-IS48	IR86-GW-IS48-55-60-07B	X									
IR86-IS48	IR86-GW-IS48D-47-53-07B	X									
IR86-IS49	IR86-GW-IS49-22-27-07B	X									
IR86-IS49	IR86-GW-IS49-47-53-07B	X									
IR86-IS49	IR86-GW-IS49-55-60-07B	X									
IR86-IS50	IR86-GW-IS50-22-27-07B	X									
IR86-IS50	IR86-GW-IS50-47-53-07B	X									
IR86-IS50	IR86-GW-IS50-55-60-07B	X									
IR86-IS53	IR86-GW-IS53-20-24-07B	X									
IR86-IS53	IR86-GW-IS53-47-53-07B	X									
IR86-IS53	IR86-GW-IS53-55-60-07B	X									
IR86-IS54	IR86-GW-IS54-22-27-07B	X									
IR86-IS54	IR86-GW-IS54-47-53-07B	X									
IR86-IS54	IR86-GW-IS54-55-60-07B	X									
IR86-IS55	IR86-GW-IS55-22-27-07B	X									
IR86-IS55	IR86-GW-IS55-47-53-07B	X									
IR86-IS55	IR86-GW-IS55-55-60-07B	X									
IR86-IS56	IR86-GW-IS56-22-27-07B	X									
IR86-IS56	IR86-GW-IS56-47-53-07B	X									
IR86-IS56	IR86-GW-IS56-55-60-07B	X									
IR86-IS57	IR86-GW-IS57-22-27-07B	X									
IR86-IS57	IR86-GW-IS57-47-53-07B	X									
IR86-IS57	IR86-GW-IS57-55-60-07B	X									
IR86-IS58	IR86-GW-IS58-22-27-07B	X									
IR86-IS58	IR86-GW-IS58-47-53-07B	X									
IR86-IS58	IR86-GW-IS58-55-60-07B	X									
IR86-IS59	IR86-GW-IS59-22-27-07B	X									
IR86-IS59	IR86-GW-IS59-47-53-07B	X									
IR86-IS59	IR86-GW-IS59-55-60-07B	X									
IR86-IS59	IR86-GW-IS59D-47-53-07B	X									
IR86-IS60	IR86-GW-IS60-22-27-07B	X									
IR86-IS60	IR86-GW-IS60-47-53-07B	X									
IR86-IS60	IR86-GW-IS60-55-60-07B	X									
IR86-IS61	IR86-GW-IS61-22-27-07B	X									
IR86-IS61	IR86-GW-IS61-47-53-07B	X									
IR86-IS61	IR86-GW-IS61-55-60-07B	X									
IR86-IS62	IR86-GW-IS62-22-27-07B	X									
IR86-IS62	IR86-GW-IS62-47-53-07B	X									
IR86-IS62	IR86-GW-IS62-55-60-07B	X									
IR86-IS63	IR86-GW-IS63-22-27-07B	X									
IR86-IS63	IR86-GW-IS63-47-53-07B	X									
IR86-IS63	IR86-GW-IS63-55-60-07B	X									
IR86-IS63	IR86-GW-IS63D-22-27-07B	X									
IR86-IS64	IR86-GW-IS64-22-27-07B	X									

TABLE 3-4
Laboratory Analytical Methods - Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOA (EPA 8260B, EPA OLM-V, EPA SOM01_V_TRACE)	Iron/Manganese (EPA 6010B, EPA ILM05-MET)	Alkalinity (EPA 2320B, EPA 310.2)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (EPA 4500_S_D, EPA 376.1)	MEE (EPA RSK-175)	Ferric Iron (EPA 3500_FE_D)	Ferrous Iron (EPA 3500_FE_D)	TOC (EPA 9060)
IR86-IS64	IR86-GW-IS64-47-53-07B	X									
IR86-IS64	IR86-GW-IS64-55-60-07B	X									
IR86-IS64	IR86-GW-IS64D-47-53-07B	X									
IR86-IS65	IR86-GW-IS65-22-27-07B	X									
IR86-IS65	IR86-GW-IS65-47-53-07B	X									
IR86-IS65	IR86-GW-IS65-55-60-07B	X									
IR86-IS65	IR86-GW-IS65D-55-60-07B	X									
IR86-IS66	IR86-GW-IS66-22-27-07B	X									
IR86-IS66	IR86-GW-IS66-47-53-07B	X									
IR86-IS66	IR86-GW-IS66-55-60-07B	X									
IR86-IS67	IR86-GW-IS67-22-27-07B	X									
IR86-IS67	IR86-GW-IS67-47-53-07B	X									
IR86-IS67	IR86-GW-IS67-55-60-07B	X									
IR86-IS67	IR86-GW-IS67D-22-27-07B	X									
Supplemental RI - Phase I Confirmation Sampling (October 2007 - December 2007)											
SWMU318-MW01	SWMU318-GW01-07D	X	X	X	X	X	X	X	X	X	X
SWMU318-MW03	SWMU318-GW03-07D	X	X	X	X	X	X	X	X	X	X
SWMU318-MW05	SWMU318-GW05-07D	X	X	X	X	X	X	X	X	X	X
SWMU318-MW06	SWMU318-GW06-07D	X	X	X	X	X	X	X	X	X	X
SWMU318-MW08	SWMU318-GW08-07D	X	X	X	X	X	X	X	X	X	X
IR86-AS428-MW05	IR86-AS428-GW05-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW15DW	IR86-GW15DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW15IW	IR86-GW15IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW16DW	IR86-GW16DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW16IW	IR86-GW16IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW17DW	IR86-GW17DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW18DW	IR86-GW18DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW19DW	IR86-GW19DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW20IW	IR86-GW20IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW22IW	IR86-GW22IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW23IW	IR86-GW23IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW24IW	IR86-GW24IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW25IW	IR86-GW25IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW26IW	IR86-GW26IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW27IW	IR86-GW27IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW29IW	IR86-GW29IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW30IW	IR86-GW30IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW31DW	IR86-GW31DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW31IW	IR86-GW31IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW34IW	IR86-GW34IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW39	IR86-GW39-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW40	IR86-GW40-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW41	IR86-GW41-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW42DW	IR86-GW42DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW42IW	IR86-GW42IW-08A	X	X	X	X	X	X	X	X	X	X
IR86-MW43IW	IR86-GW43IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW44DW	IR86-GW44DW-07D	X	X	X	X	X	X	X	X	X	X

TABLE 3-4
Laboratory Analytical Methods - Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOA (EPA 8260B, EPA OLM-V, EPA SOM01_V_TRACE)	Iron/Manganese (EPA 6010B, EPA ILM05-MET)	Alkalinity (EPA 2320B, EPA 310.2)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (EPA 4500_S_D, EPA 376.1)	MEE (EPA RSK-175)	Ferric Iron (EPA 3500_FE_D)	Ferrous Iron (EPA 3500_FE_D)	TOC (EPA 9060)
IR86-MW44IW	IR86-GW44IW-08A	X	X	X	X	X	X	X	X	X	X
IR86-MW45DW	IR86-GW45DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW46IW	IR86-GW46IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW47	IR86-GW47-08A	X	X	X	X	X	X	X	X	X	X
IR86-MW47IW	IR86-GW47IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW48	IR86-GW48-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW48IW	IR86-GW48IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW49DW	IR86-GW49DW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW50IW	IR86-GW50IW-07D	X	X	X	X	X	X	X	X	X	X
IR86-MW51DW	IR86-GW51DW-07D	X	X	X	X	X	X	X	X	X	X
Supplemental RI - Phase II Confirmation Sampling (June 2008)											
IR86-MW09	IR86-MW09-08B	X									
IR86-MW28IW	IR86-MW28IW-08B	X	X	X	X		X	X			X
IR86-MW33IW	IR86-MW33IW-08B	X	X	X	X		X	X			X
IR86-MW34IW	IR86-MW34IW-08B	X									
IR86-MW38IWA	IR86-MW38IWA-08B	X	X	X	X		X	X			X
IR86-MW38IWB	IR86-MW38IWB-08B	X	X	X	X		X	X			X
IR86-MW38IWC	IR86-MW38IWC-08B	X	X	X	X		X	X			X
IR86-MW47	IR86-MW47-08B	X									
IR86-MW49DW	IR86-MW49DW-08B	X									
IR86-MW52	IR86-MW52-08B	X									
IR86-MW53	IR86-MW53-08B	X									
IR86-MW54IW	IR86-MW54IW-08B	X									
IR86-MW55IW	IR86-MW55IW-08B	X									
IR86-MW56IW	IR86-MW56IW-08B	X									
Supplemental RI - Phase III Screening/Confirmation Sampling (October 2008)											
IR86-IS50	IR86-IS50-GW-41-45-08D	X									
IR86-IS50	IR86-IS50-GW-46-50-08D	X									
IR86-IS50	IR86-IS50-GW-51-55-08D	X									
IR86-IS51	IR86-IS51-GW-41-45-08D	X									
IR86-IS51	IR86-IS51-GW-46-50-08D	X									
IR86-IS51	IR86-IS51-GW-51-55-08D	X									
IR86-IS51	IR86-IS51-GW-56-60-08D	X									
IR86-IS52	IR86-IS52-GW-41-45-08D	X									
IR86-IS52	IR86-IS52-GW-46-50-08D	X									
IR86-IS52	IR86-IS52-GW-51-55-08D	X									
IR86-IS52	IR86-IS52-GW-56-60-08D	X									
IR86-IS53	IR86-IS53-GW-41-45-08D	X									
IR86-IS53	IR86-IS53-GW-46-50-08D	X									
IR86-IS53	IR86-IS53-GW-51-55-08D	X									
IR86-IS53	IR86-IS53-GW-56-60-08D	X									
IR86-IS54	IR86-IS54-GW-41-45-08D	X									
IR86-IS54	IR86-IS54-GW-46-50-08D	X									
IR86-IS55	IR86-IS55-GW-46-50-08D	X									
IR86-IS55	IR86-IS55-GW-41-45-08D	X									
IR86-IS55	IR86-IS55-GW-51-55-08D	X									
IR86-MW15DW	IR86-MW15DW-08D	X									

TABLE 3-4
Laboratory Analytical Methods - Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOA (EPA 8260B, EPA OLM-V, EPA SOM01_V_TRACE)	Iron/Manganese (EPA 6010B, EPA ILM05-MET)	Alkalinity (EPA 2320B, EPA 310.2)	CNNS (EPA 300)	Chloride (EPA 300)	Sulfide (EPA 4500_S_D, EPA 376.1)	MEE (EPA RSK-175)	Ferric Iron (EPA 3500_FE_D)	Ferrous Iron (EPA 3500_FE_D)	TOC (EPA 9060)
IR86-MW40IW	IR86-MW40IW-08D	X	X	X	X		X	X			X
IR86-MW41IW	IR86-MW41IW-08D	X	X	X	X		X	X			X
IR86-MW44DW	IR86-MW44DW-08D	X									
IR86-MW45DW	IR86-MW45DW-08D	X									
IR86-MW46IW	IR86-MW46IW-08D	X									
IR86-MW47IW	IR86-MW47IW-08D	X									
IR86-MW48	IR86-MW48-08D	X									
IR86-MW50IW	IR86-MW50IW-08D	X									
IR86-MW52IW	IR86-MW52IW-08D	X	X	X	X		X	X			X
IR86-MW53IW	IR86-MW53IW-08D	X	X	X	X		X	X			X

Notes:

CNNS - Chloride, nitrate, nitrite, sulfate
MEE - Methane, ethane, ethene
PAH - Polycyclic aromatic hydrocarbons
PCBs- Polychlorinated biphenyls
Pest - Pesticides
SVOC - Semivolatile organic compounds
TOC - Total organic carbon
VOC - Volatile organic compounds

Laboratory Analysis performed by Compuchem Laboratories and Empirical Laboratories (October 2008

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 3-5

Laboratory Analytical Methods - Sediment

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Station ID	Sample Name	VOC (EPA SOM01_V_LOW, EPA 8260B)	SVOC (EPA SOM01_V_LOW, EPA SOM01_SV_LOW, EPA 8270D)	PAH (EPA SOM01_SV_LOW_SIM, EPA 8270D_SIM)	Pest/PCB (EPA SOM01_A, EPA SOM01_P, EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA ILM05_MET)	Mercury (EPA 7471B, EPA ILM05_MET)	TOC (EPA WalkleyBlack)	Percent Solids (EPA 160.3)
Supplemental Remedial Investigation Phase II Confirmatory Sampling (June 2008)									
IR86-SD01	IR86-SD01-08B	X	X	X	X	X			
IR86-SD02	IR86-SD02-08B	X	X	X	X	X			
IR86-SD02	IR86-SD02D-08B	X	X	X	X	X			
Expanded Supplemental Remedial Investigation Confirmation Sampling (Oct. 2009- March 2010)									
IR86-SD105	IR86-SD105-0-0.5-09D	X	X	X	X	X	X	X	X
IR86-SD105	IR86-SD105-10A				X				
IR86-SD106	IR86-SD106-0-0.5-09D	X	X	X	X	X	X	X	X
IR86-SD106	IR86-SD106-10A				X				
IR86-SD107	IR86-SD107-0-0.5-09D	X	X	X	X	X	X		X
IR86-SD107	IR86-SD107D-0-0.5-09D	X	X	X	X	X	X		X
IR86-SD108	IR86-SD108-0-0.5-09D	X	X	X	X	X	X	X	X
IR86-SD108	IR86-SD108-10A				X				
IR86-SD109	IR86-SD109-0-0.5-09D	X	X	X	X	X	X		X
IR86-SD109	IR86-SD109-10A				X				
IR86-SD110	IR86-SD110-0-0.5-09D	X	X	X	X	X	X	X	X
IR86-SD110	IR86-SD110-10A				X				
IR86-SD112	IR86-SD112-0-0.5-09D	X	X	X	X	X	X	X	X
IR86-SD112	IR86-SD112-10A				X				
IR86-SD112	IR86-SD112D-10A				X				
IR86-SD113	IR86-SD113-0-0.5-09D	X	X	X	X	X	X		X
IR86-SD113	IR86-SD113-10A				X				

Notes:

PAH - Polycyclic aromatic hydrocarbons

PCB - Polychlorinated biphenyls

Pest - Pesticides

SVOC - Semivolatile organic compounds

TOC - Total organic carbon

VOC - Volatile organic compounds

Laboratory Analysis performed by Compuchem Laboratories (2008) and Shealy Laboratories (2009/2010)

Generated By: D. Brown/CLT

Checked By: T.Grim/CLT

TABLE 3-6
Laboratory Analytical Methods - Surface Water
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Sample Name	VOC (EPA 8260B, EPA OLM-V, EPA SOM01_V_TRACE)	SVOC (EPA 8270D, EPA OLM-SV, EPA SOM01_SV_LOW)	PAH (EPA 8270D_SIM, EPA OLM-SV, EPA SOM01_SV_LOW_SIM)	Pest/PCB (EPA OLM-P/A, EPA SOM01_A, EPA SOM01_P, EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA ILM05-MET)	Dissolved Metal (EPA 6010C, EPA ILM05-MET)	Mercury (EPA ILM05-MET, EPA 7074A)	Dissolved Mercury (EPA ILM05-MET, EPA 7074A)
Supplemental Remedial Investigation Phase I Confirmatory Sampling (Oct. 2007-Dec. 2007)									
IR86-SW01	IR86-SW01-07D	X	X		X	X			
IR86-SW02	IR86-SW02-07D	X	X		X	X			
IR86-SW03	IR86-SW03-07D	X	X		X	X			
Supplemental Remedial Investigation Phase II Confirmatory Sampling (June 2008)									
IR86-SW01	IR86-SW01-08B	X	X	X	X	X			
IR86-SW02	IR86-SW02-08B	X	X	X	X	X			
IR86-SW02	IR86-SW02D-08B	X	X	X	X	X			
Expanded Supplemental Remedial Investigation Confirmation Sampling (Nov. 2009)									
IR86-SW105	IR86-SW105-09D	X	X	X	X	X	X	X	X
IR86-SW105	IR86-SW105D-09D	X	X	X	X	X	X	X	X
IR86-SW106	IR86-SW106-09D	X	X	X	X	X	X	X	X
IR86-SW108	IR86-SW108-09D	X	X	X	X	X	X	X	X
IR86-SW110	IR86-SW110-09D	X	X	X	X	X	X	X	X
IR86-SW112	IR86-SW112-09D	X	X	X	X	X	X	X	X
IR86-SW113	IR86-SW113-09D	X	X	X	X	X	X	X	X

Notes:

VOC - Volatile organic compounds
SVOC - Semivolatile organic compounds
PAH - Polycyclic aromatic hydrocarbons
Pest - Pesticides
PCB - Polychlorinated biphenyls
Laboratory analysis performed by Compuchem Laboratories (2007/2008) and Shealy Laboratories (2009/2010)

Generated By: D. Brown/CLT
Checked By: T/Grim/CLT

TABLE 3-7
Laboratory Analytical Methods - Surface Soil
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Sample Name	VOC (EPA 8260B, EPA OLM-V)	SVOC (EPA 8270D, EPA OLM-SV)	PAH (EPA 8270D_SIM, EPA OLM-SV	Pest/PCB (EPA OLM-P/A, EPA 8081B, EPA 8082A)	Metal (EPA 6010C, EPA ILM05_MET	Mercury (EPA ILM05_MET, EPA 747
Supplemental Remedial Investigation Phase I Confirmation Sampling (Oct. 2007- Dec. 2007)							
IR86-SS01	IR86-SS01-07D	X	X		X	X	
IR86-SS02	IR86-SS02-07D	X	X		X	X	
IR86-SS03	IR86-SS03-07D	X	X		X	X	
IR86-SS04	IR86-SS04-07D	X	X		X	X	
IR86-SS05	IR86-SS05-07D	X	X		X	X	
IR86-SS05	IR86-SS05D-07D	X	X		X	X	
IR86-SS06	IR86-SS06-07D	X	X		X	X	
IR86-SS07	IR86-SS07-07D	X	X		X	X	
IR86-SS08	IR86-SS08-07D	X	X		X	X	
IR86-SS09	IR86-SS09-07D	X	X		X	X	
IR86-SS10	IR86-SS10-07D	X	X		X	X	
Expanded Supplemental Remedial Investigation Screening Sampling (Oct. 2009)							
IR86-IS100	IR86-SS100-09D	X	X	X	X	X	X
IR86-IS101	IR86-SS101-0-0.5-09D	X	X	X	X	X	X
IR86-IS102	IR86-SS102-0-0.5-09D	X	X	X	X	X	X
IR86-IS103	IR86-SS103-0-0.5-09D	X	X	X	X	X	X
IR86-IS103	IR86-SS103D-0-0.5-09D	X	X	X	X	X	X
IR86-IS104	IR86-SS104-0-0.5-09D	X	X	X	X	X	X
IR86-IS105	IR86-SS105-0-0.5-09D	X	X	X	X	X	X
IR86-IS106	IR86-SS106-0-0.5-09D	X	X	X	X	X	X
IR86-IS107	IR86-SS107-0-0.5-09D	X	X	X	X	X	X
IR86-IS108	IR86-SS108-0-0.5-09D	X	X	X	X	X	X
IR86-IS109	IR86-SS109-09D	X	X	X	X	X	X
IR86-IS110	IR86-SS110-0-0.5-09D	X	X	X	X	X	X
IR86-IS111	IR86-SS111-0-0.5-09D	X	X	X	X	X	X
IR86-IS112	IR86-SS112-0-0.5-09D	X	X	X	X	X	X
IR86-IS113	IR86-SS113-0-0.5-09D	X	X	X	X	X	X
IR86-IS114	IR86-SS114-0-0.5-09D	X	X	X	X	X	X
IR86-IS114	IR86-SS114D-0-0.5-09D	X	X	X	X	X	X

Notes:

PAH - Polycyclic aromatic hydrocarbons
PCB - Polychlorinated biphenyls
Pest - Pesticides
SVOC - Semivolatile organic compounds
VOC - Volatile organic compounds
Laboratory analysis performed by Compuchem Laboratories (2007) and Shealy Laboratories (2009)

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 3-8
Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA 6010B)	Dissolved Metal (EPA 6010C, EPA 6010B)	Iron, Manganese (EPA 6010C, EPA 6010B)	Mercury (EPA 7470A, EPA ILM04-MET)	Dissolved Mercury (EPA 7470A, EPA ILM04-MET)	Alkalinity (EPA 2320B, EPA 310.1)	Chloride/Sulfate (EPA 300, EPA ASTM 516-90)	Chloride (325.2)	Sulfide (EPA 4500_S2_F, EPA 376.1)	MEE (RSK-175)	TOC (EPA 5310, EPA 415.1)
ESRI Screening (October 2009)																
IR86-IS100	IR86-IS100-13-14-09D	X														
IR86-IS100	IR86-IS100-28-32-09D	X														
IR86-IS100	IR86-IS100-38-42-09D	X														
IR86-IS100	IR86-IS100-48-52-09D	X														
IR86-IS100	IR86-IS100-60-64-09D	X														
IR86-IS101	IR86-IS101-12-16-09D	X														
IR86-IS101	IR86-IS101-32-36-09D	X														
IR86-IS101	IR86-IS101-22-26-09D	X														
IR86-IS101	IR86-IS101-22-26-09D-U	X														
IR86-IS101	IR86-IS101-42-46-09D	X														
IR86-IS101	IR86-IS101-50-54-09D	X														
IR86-IS101	IR86-IS101-60-64-09D	X														
IR86-IS103	IR86-IS103-28-32-09D	X														
IR86-IS103	IR86-IS103-48-52-09D	X														
IR86-IS103	IR86-IS103-60-64-09D	X														
IR86-IS107	IR86-IS107-28-32-09D	X														
IR86-IS107	IR86-IS107-48-52-09D	X														
IR86-IS107	IR86-IS107-60-64-09D	X														
IR86-IS109	IR86-IS109-12-16-09D	X														
IR86-IS109	IR86-IS109-28-32-09D	X														
IR86-IS109	IR86-IS109-38-42-09D	X														
IR86-IS109	IR86-IS109-48-52-09D	X														
IR86-IS109	IR86-IS109-60-64-09D	X														
IR86-IS109	IR86-IS109-66-70-09D	X														
IR86-IS109	IR86-IS109-66-70-09D-U	X														
IR86-IS109	IR86-IS109-76-80-09D	X														
IR86-IS110	IR86-IS110-28-32-09D	X														
IR86-IS110	IR86-IS110-48-32-09D	X														
IR86-IS110	IR86-IS110-60-64-09D	X														

TABLE 3-8
Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA 6010B)	Dissolved Metal (EPA 6010C, EPA 6010B)	Iron, Manganese (EPA 6010C, EPA 6010B)	Mercury (EPA 7470A, EPA ILM04-MET)	Dissolved Mercury (EPA 7470A, EPA ILM04-MET)	Alkalinity (EPA 2320B, EPA 310.1)	Chloride/Sulfate (EPA 300, EPA ASTM 516-90)	Chloride (325.2)	Sulfide (EPA 4500_S2_F, EPA 376.1)	MEE (RSK-175)	TOC (EPA 5310, EPA 415.1)
IR86-IS111	IR86-IS111-28-32-09D	X														
IR86-IS111	IR86-IS111-48-52-09D	X														
IR86-IS111	IR86-IS111-60-64-09D	X														
IR86-IS113	IR86-IS113-28-32-09D	X														
IR86-IS113	IR86-IS113-48-52-09D	X														
IR86-IS113	IR86-IS113-60-64-09D	X														
IR86-IS114	IR86-IS114-12-16-09D	X														
IR86-IS114	IR86-IS114-22-26-09D	X														
IR86-IS114	IR86-IS114-32-36-09D	X														
IR86-IS114	IR86-IS114-42-46-09D	X														
IR86-IS114	IR86-IS114-52-56-09D	X														
IR86-IS114	IR86-IS114-62-66-09D	X														
IR86-IS115	IR86-IS115-28-32-09D	X														
IR86-IS115	IR86-IS115-48-52-09D	X														
IR86-IS115	IR86-IS115-60-64-09D	X														
IR86-IS116	IR86-IS116-28-32-09D	X														
IR86-IS116	IR86-IS116-48-52-09D	X														
IR86-IS116	IR86-IS116-60-64-09D	X														
IR86-IS117	IR86-IS117-20-24-09D	X														
IR86-IS117	IR86-IS117-48-52-09D	X														
IR86-IS117	IR86-IS117-60-64-09D	X														
IR86-IS118	IR86-IS118-20-24-09D	X														
IR86-IS118	IR86-IS118-48-52-09D	X														
IR86-IS118	IR86-IS118-60-64-09D	X														
IR86-IS119	IR86-IS119-20-24-09D	X														
IR86-IS119	IR86-IS119-48-52-09D	X														
IR86-IS119	IR86-IS119-60-64-09D	X														
IR86-IS120	IR86-IS120-20-24-09D	X														
IR86-IS120	IR86-IS120-48-52-09D	X														
IR86-IS120	IR86-IS120-60-64-09D	X														

TABLE 3-8
Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA 6010B)	Dissolved Metal (EPA 6010C, EPA 6010B)	Iron, Manganese (EPA 6010C, EPA 6010B)	Mercury (EPA 7470A, EPA ILM04-MET)	Dissolved Mercury (EPA 7470A, EPA ILM04-MET)	Alkalinity (EPA 2320B, EPA 310.1)	Chloride/Sulfate (EPA 300, EPA ASTM 516-90)	Chloride (325.2)	Sulfide (EPA 4500_S2_F, EPA 376.1)	MEE (RSK-175)	TOC (EPA 5310, EPA 415.1)
ESRI Confirmation Sampling (Nov. 2009 - March 2010)																
IR86-MW03	IR86-GW03-09D	X						X			X	X		X	X	X
IR86-MW09	IR86-GW09-09D	X						X			X	X		X	X	X
IR86-MW10IW	IR86-GW10IW-09D	X						X			X	X		X	X	X
IR86-MW15DW	IR86-GW15DW-10A	X						X			X	X		X	X	X
IR86-MW15IW	IR86-GW15IW-09D	X						X			X	X		X	X	X
IR86-MW16DW	IR86-GW16DW-09D	X						X			X	X		X	X	X
IR86-MW16IW	IR86-GW16IW-09D	X						X			X	X		X	X	X
IR86-MW17DW	IR86-GW17DW-09D	X						X			X	X		X	X	X
IR86-MW17IW	IR86-GW17IW-09D	X						X			X	X		X	X	X
IR86-MW18DW	IR86-GW18DW-09D	X						X			X	X		X	X	X
IR86-MW19DW	IR86-GW19DW-09D	X						X			X	X		X	X	X
IR86-MW22IW	IR86-GW22IW-09D	X						X			X	X		X	X	X
IR86-MW27IW	IR86-GW27IW-09D	X						X			X	X		X	X	X
IR86-MW29IW	IR86-GW29IW-09D	X						X			X	X		X	X	X
IR86-MW30IW	IR86-GW30IW-09D	X						X			X	X		X	X	X
IR86-MW31DW	IR86-GW31DW-09D	X						X			X	X		X	X	X
IR86-MW31IW	IR86-GW31IW-09D	X						X			X	X		X	X	X
IR86-MW34IW	IR86-GW34IW-09D	X						X			X	X		X	X	X
IR86-MW38IWA	IR86-GW38IWA-09D	X						X			X	X		X	X	X
IR86-MW38IWB	IR86-GW38IWB-09D	X						X			X	X		X	X	X
IR86-MW38IWC	IR86-GW38IWC-09D	X						X			X	X		X	X	X
IR86-MW39	IR86-GW39-10A	X						X			X	X		X	X	X
IR86-MW40	IR86-GW40-09D	X						X			X	X		X	X	X
IR86-MW41	IR86-GW41-09D	X						X			X	X		X	X	X
IR86-MW42DW	IR86-GW42DW-09D	X						X			X	X		X	X	X
IR86-MW42IW	IR86-GW42IW-09D	X						X			X	X		X	X	X
IR86-MW43IW	IR86-GW43IW-09D	X						X			X	X		X	X	X
IR86-MW44DW	IR86-GW44DW-09D	X						X			X	X		X	X	X
IR86-MW44IW	IR86-GW44IW-09D	X						X			X	X		X	X	X

TABLE 3-8
Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA 6010B)	Dissolved Metal (EPA 6010C, EPA 6010B)	Iron, Manganese (EPA 6010C, EPA 6010B)	Mercury (EPA 7470A, EPA ILM04-MET)	Dissolved Mercury (EPA 7470A, EPA ILM04-MET)	Alkalinity (EPA 2320B, EPA 310.1)	Chloride/Sulfate (EPA 300, EPA ASTM 516-90)	Chloride (325.2)	Sulfide (EPA 4500_S2_F, EPA 376.1)	MEE (RSK-175)	TOC (EPA 5310, EPA 415.1)
IR86-MW45DW	IR86-GW45DW-10A	X						X			X	X		X	X	X
IR86-MW46IW	IR86-GW46IW-09D	X						X			X	X		X	X	X
IR86-MW47	IR86-GW47-09D	X						X			X	X		X	X	X
IR86-MW47IW	IR86-GW47IW-09D	X						X			X	X		X	X	X
IR86-MW48	IR86-GW48-09D	X						X			X	X		X	X	X
IR86-MW48IW	IR86-GW48IW-09D	X						X			X	X		X	X	X
IR86-MW49DW	IR86-GW49DW-09D	X						X			X	X		X	X	X
IR86-MW51DW	IR86-GW51DW-10A	X						X			X	X		X	X	X
IR86-MW52	IR86-GW52-09D	X						X			X	X		X	X	X
IR86-MW52IW	IR86-GW52IW-10A	X														
IR86-MW53	IR86-GW53-09D	X						X			X	X		X	X	X
IR86-MW53IW	IR86-GW53IW-10A	X														
IR86-MW54IW	IR86-GW54IW-09D	X						X			X	X		X	X	X
IR86-MW55IW	IR86-GW55IW-09D	X						X			X	X		X	X	X
IR86-MW55IW	IR86-GW55IWD-09D	X														
IR86-MW56	IR86-GW56-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW56	IR86-GW56-10A								X							
IR86-MW56DW	IR86-GW56DW-10A	X	X	X	X	X		X	X		X	X		X	X	X
IR86-MW58	IR86-GW58-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW58	IR86-GW58-10A								X							
IR86-MW58DW	IR86-GW58DW-10A	X	X	X	X	X		X	X		X	X		X	X	X
IR86-MW58IW	IR86-GW58IW-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW58IW	IR86-GW58IW-10A								X							
IR86-MW59	IR86-GW59-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW59DW	IR86-GW59DW-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW59IW	IR86-GW59IW-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW60	IR86-GW60-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW60IW	IR86-GW60IW-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW61	IR86-GW61-09D	X	X	X	X			X			X	X		X	X	X
IR86-MW61DW	IR86-GW61DW-09D	X	X	X	X	X		X			X	X		X	X	X

TABLE 3-8
Laboratory Analytical Methods - Expanded Supplemental Remedial Groundwater Investigation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well/Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8082A, EPA 8081B)	Metal (EPA 6010C, EPA 6010B)	Dissolved Metal (EPA 6010C, EPA 6010B)	Iron, Manganese (EPA 6010C, EPA 6010B)	Mercury (EPA 7470A, EPA ILM04-MET)	Dissolved Mercury (EPA 7470A, EPA ILM04-MET)	Alkalinity (EPA 2320B, EPA 310.1)	Chloride/Sulfate (EPA 300, EPA ASTM 516-90)	Chloride (325.2)	Sulfide (EPA 4500_S2_F, EPA 376.1)	MEE (RSK-175)	TOC (EPA 5310, EPA 415.1)
IR86-MW61IW	IR86-GW61IW-09D	X	X	X	X			X			X	X		X	X	X
IR86-MW62	IR86-GW62-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW63	IR86-GW63-10A	X	X	X	X	X		X	X		X	X		X	X	X
IR86-MW63IW	IR86-GW63IW-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW64	IR86-GW64-09D	X	X	X	X	X		X			X	X		X	X	X
IR86-MW65	IR86-GW65-10A	X				X		X			X	X	X	X	X	X
IR86-MW66IW	IR86-GW66IW-10B	X														
SWMU318-MW01	SWMU318-MW01-09D	X						X			X	X		X	X	X
SWMU318-MW05	SWMU318-MW05-09D	X						X			X	X		X	X	X
SWMU318-MW08	SWMU318-MW08-09D	X						X			X	X		X	X	X
USTAS410S-MW02	USTAS410S-MW02-09D	X						X			X	X		X	X	X

Notes:
MEE - Methane, ethane, ethene
PAH - Polycyclic aromatic hydrocarbons
PCB - Polychlorinated biphenyls
Pest - Pesticides
SVOC - Semivolatile organic compounds
TOC - Total organic carbon
VOC - Volatile organic compounds
Laboratory analysis performed by

Generated By: K. Ramsey/CLT
Checked by: T.Grim/CLT

TABLE 3-9
Laboratory Analytical Methods - Subsurface Soil
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Sample Name	VOC (EPA 8260B)	SVOC (EPA 8270D)	PAH (EPA 8270D_SIM)	Pest/PCB (EPA 8081B, EPA 8082A)	Metal (EPA 6010C)	Mercury (EPA 7471B)
Expanded Supplemental Remedial Investigation Screening (Oct. 2009)							
IR86-IS100	IR86-SB100-06-07-09D	X	X	X	X	X	X
IR86-IS101	IR86-SB101-06-07-09D	X	X	X	X	X	X
IR86-IS102	IR86-SB102-07-08-09D	X	X	X	X	X	X
IR86-IS103	IR86-SB103-08-09-09D	X	X	X	X	X	X
IR86-IS104	IR86-SB104-08-09-09D	X	X	X	X	X	X
IR86-IS105	IR86-SB105-05-06-09D	X	X	X	X	X	X
IR86-IS106	IR86-SB106-07-08-09D	X	X	X	X	X	X
IR86-IS107	IR86-SB107-07-08-09D	X	X	X	X	X	X
IR86-IS107	IR86-SB107-16-17-09D	X	X	X	X	X	X
IR86-IS107	IR86-SB107D-07-08-09D	X	X	X	X	X	X
IR86-IS108	IR86-SB108-05-06-09D	X	X	X	X	X	X
IR86-IS109	IR86-SB109-07-08-09D	X	X	X	X	X	X
IR86-IS110	IR86-SB110-06-07-09D	X	X	X	X	X	X
IR86-IS111	IR86-SB111-01-02-09D	X	X	X	X	X	X
IR86-IS112	IR86-SB112-05-06-09D	X	X	X	X	X	X
IR86-IS113	IR86-SB113-02-03-09D	X	X	X	X	X	X
IR86-IS114	IR86-SB114-05-06-09D	X	X	X	X	X	X

Notes:

PAH - Polycyclic aromatic hydrocarbons
PCB - Polychlorinated biphenyls
Pest - Pesticides
SVOC - Semivolatile organic compounds
VOC - Volatile organic compounds
Laboratory analysis performed by Shealy Laboratories

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 3-10

Summary of Groundwater Quality Parameters - Surficial Aquifer (December 2009 and January 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	Purge Volume (gallons)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH (SU)	ORP (mV)	Turbidity (NTU)
IR86-MW03	12/14/2009	10	18.79	0.065	0.31	4.60	186.8	12.4
IR86-MW09	12/11/2009	8	18.78	0.104	0.24	5.72	-29.4	17.5
IR86-MW10IW	12/14/2009	5	19.40	0.439	0.27	4.84	-22.4	6.9
IR86-MW27IW	12/10/2009	10	22.21	0.388	0.16	5.88	-150.2	3.69
IR86-MW38IWA	12/10/2009	13	20.82	4.209	1.59	4.31	151.5	11.0
IR86-MW39	1/13/2010	6	21.25	0.271	0.13	5.87	-83.4	28.0
IR86-MW40	12/15/2009	13	20.55	0.146	0.49	5.08	50.0	41.8
IR86-MW41	12/7/2009	14	22.00	0.636	0.21	6.53	-108.7	23.6
IR86-MW47	12/9/2009	11	23.39	0.189	0.21	5.46	-108.7	19.5
IR86-MW48	12/13/2009	18	22.90	0.130	0.55	4.98	-19.8	16.6
IR86-MW52	12/9/2009	10	21.20	0.439	3.91	6.10	15.0	23.0
IR86-MW53	12/8/2009	8	21.36	0.565	0.22	8.09	-196.9	8.7
IR86-MW56	12/16/2009	12	21.08	0.694	0.23	6.42	-100.2	19.2
IR86-MW58	12/16/2009	13	19.46	0.903	0.18	6.78	-33.9	31.0
IR86-MW59	12/12/2009	17	18.33	0.571	0.15	6.66	-87.9	9.7
IR86-MW60	12/18/2009	6	16.90	1.056	0.12	6.67	-74.5	34.2
IR86-MW61	12/12/2009	5	16.20	0.910	0.20	6.46	-34.7	7.9
IR86-MW62	12/14/2009	14	17.91	0.696	0.15	6.95	-94.0	9.7
IR86-MW63	1/13/2010	10	18.19	0.687	2.95	7.04	-60.0	12.0
IR86-MW64	12/16/2009	10	18.23	0.349	0.23	8.45	-204.2	40.0
IR86-MW65	3/24/2010	5	17.76	0.113	1.61	5.96	35.7	6.8
SWMU318-MW01	12/10/2009	13	23.53	0.407	0.18	5.83	-105.4	7.7
SWMU318-MW05	12/13/2009	13	21.95	0.359	0.22	4.36	-49.3	3.0
SWMU318-MW08	12/8/2009	13	21.85	0.567	0.15	6.72	-119.4	9.6
USTAS410S-MW02	12/9/2009	8	20.57	0.242	0.40	6.14	-17.1	28.0

Notes:

°C - Degrees Celsius
mg/L - Milligrams per liter
mS/cm - MilliSiemens per centimeter
mV - Millivolt
NTU - Nephelometric turbidity unit
ORP - Oxidation reduction potential
SU - Standard Unit

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 3-11

Summary of Groundwater Quality Parameters - Upper Castle Hayne Aquifer (December 2009 - January 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	Purge Volume (gallons)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH (SU)	ORP (mV)	Turbidity (NTU)
IR86-MW15IW	12/14/2009	9	21.08	0.681	0.27	7.94	-96.0	9.8
IR86-MW16IW	12/15/2009	14	17.79	0.545	0.12	7.07	-114.1	260
IR86-MW17IW	12/11/2009	13	19.28	0.984	0.17	7.76	-105.8	>1000
IR86-MW22IW	12/13/2009	10	21.33	0.336	0.18	7.05	-146.9	1.58
IR86-GW29IW	12/15/2009	10	20.80	0.685	0.19	6.88	-112.5	70.0
IR86-MW30IW	12/11/2009	9	19.22	0.353	0.21	7.15	-144.5	6.97
IR86-MW31IW	12/16/2009	11	20.32	1.091	0.20	6.82	-112.7	130
IR86-MW34IW	12/17/2009	10	17.80	0.828	0.37	7.75	-16.2	24.0
IR86-MW38IWB	12/10/2009	8	20.89	1.504	0.23	7.05	-26.1	10.0
IR86-MW38IWC	12/10/2009	23	20.86	2.669	0.17	6.90	-13.3	27.0
IR86-MW42IW	12/12/2009	13	20.74	0.872	0.11	7.47	-149.6	200
IR86-MW43IW	12/13/2009	8	21.10	0.684	0.19	8.33	-179.8	75.0
IR86-MW44IW	12/12/2009	9	20.80	0.710	0.19	7.70	-152.6	220
IR86-MW46IW	12/7/2009	9	20.80	0.414	0.31	6.19	-45.0	9.3
IR86-MW47IW	12/9/2009	20	22.31	0.201	0.26	7.24	-161.2	59.1
IR86-MW48IW	12/16/2009	9	21.72	0.386	0.18	6.93	-167.4	78.0
IR86-MW52IW	3/17/2010	7	19.80	0.826	0.82	8.12	162.2	7.2
IR86-MW53IW	3/16/2010	7	19.10	0.701	0.23	6.90	10.0	7.1
IR86-MW54IW	12/14/2009	16	21.03	0.205	2.43	7.01	-129.7	47.4
IR86-MW55IW	12/13/2009	10	21.55	1.030	0.13	7.89	-105.4	>1000
IR86-MW58IW	12/16/2009	13	19.52	0.969	0.16	7.48	-69.4	9.50
IR86-MW59IW	12/12/2009	11	18.21	0.266	0.13	8.99	-356.1	33.8
IR86-MW60IW	12/17/2009	12	18.10	0.805	0.17	7.34	-125.3	9.7
IR86-MW61IW	12/12/2009	9	17.50	0.889	0.19	6.68	-110.7	9.9
IR86-MW63IW	12/17/2009	20	18.25	0.589	0.23	6.81	-88.6	43.9
IR86-MW66IW	6/28/2010	6	18.60	0.692	0.77	6.81	13.0	5.1

Notes:

°C - Degrees Celsius

mg/L - Milligrams per liter

mS/cm - MilliSiemens per centimeter

mV - Millivolt

NTU - Nephelometric turbidity unit

ORP - Oxidation reduction potential

SU - Standard Unit

Generated By: K. Ramsey/CLT

Checked By: T.Grim/CLT

TABLE 3-12

Summary of Groundwater Quality Parameters - Middle Castle Hayne Aquifer (December 2009 - January 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	Purge Volume (gallons)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH (SU)	ORP (mV)	Turbidity (NTU)
IR86-MW15DW	1/14/2010	4	20.21	0.521	0.18	7.51	-150.1	9.80
IR86-MW16DW	12/15/2009	15	19.77	0.658	0.17	7.62	-113.6	5.00
IR86-MW17DW	12/11/2009	17	19.44	1.279	0.13	8.77	-113.3	2.70
IR86-MW18DW	12/15/2009	17	19.37	0.847	0.27	7.54	-146.4	110
IR86-MW19DW	12/14/2009	15	19.60	0.573	0.31	7.21	-136.1	7.50
IR86-MW31DW	12/18/2009	45	18.40	0.604	0.20	6.79	-103.0	7.10
IR86-MW42DW	12/13/2009	16	18.80	0.589	0.40	7.08	-130.7	6.90
IR86-MW44DW	12/13/2009	16	18.20	0.652	0.18	6.75	-159.0	20.0
IR86-MW45DW	1/15/2010	7	19.90	0.601	0.17	7.79	-210.6	19.7
IR86-MW49DW	12/17/2009	46	20.59	0.582	0.15	7.78	-97.1	1.20
IR86-MW51DW	1/15/2010	6	19.77	1.019	0.18	7.50	-204.9	27.2
IR86-MW56DW	1/14/2010	4	19.67	0.680	0.20	7.60	-181.5	24.7
IR86-MW58DW	1/13/2010	6	18.47	0.950	0.16	8.48	-306.6	63.4
IR86-MW59DW	12/18/2009	40	18.39	0.984	0.06	7.54	-165.4	57.0
IR86-MW61DW	12/18/2009	41	18.14	1.945	0.07	8.12	-203.4	47.2

Notes:

°C - Degrees Celsius
mg/L - Milligrams per liter
mS/cm - MilliSiemens per centimeter
mV - Millivolt
NTU - Nephelometric turbidity unit
ORP - Oxidation Reduction Potential
SU - Standard Unit

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

ES051410163354MKE

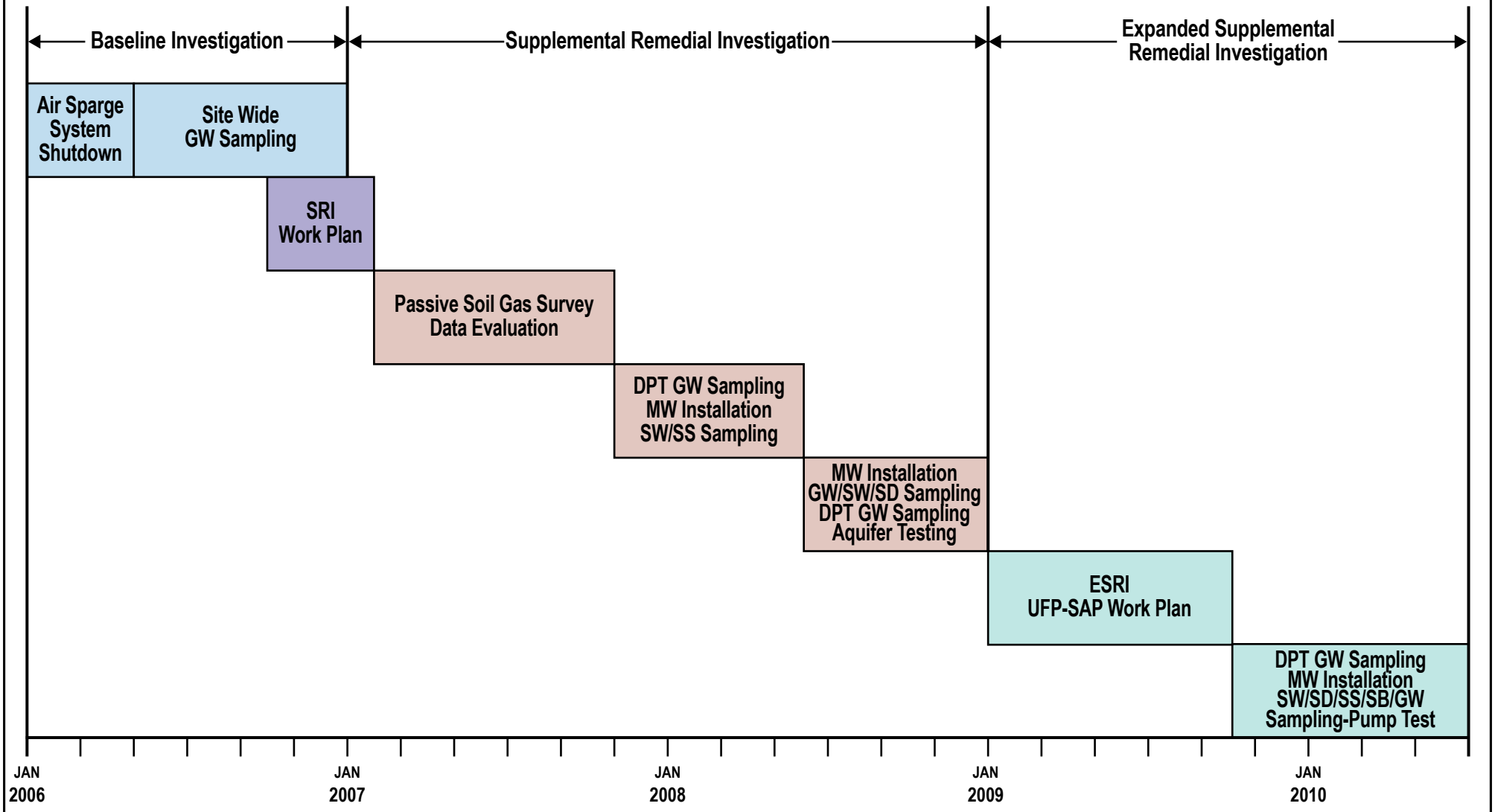


Figure 3-1
ESRI Timeline
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

NOTES:

GW	Groundwater
MW	Monitoring Well
SRI	Supplemental Remedial Investigation
DPT	Direct Push Technology
SS	Surface Soil
SW	Surface Water
SD	Sediment
SB	Subsurface Soil
ESRI	Expanded Supplemental Remedial Investigation
UFP-SAP	Uniform Federal Policy - Sample Analysis Plan

CH2MHILL

Generated by: K. Howell/CLT Checked by: T. Grim/CLT

Legend

Monitoring Wells

- Surficial Aquifer
- Upper Castle Hayne Aquifer
- Middle Castle Hayne Aquifer
- Expanded Site 86 Boundary (March 2010)

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 3-2
Monitoring Well Locations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_3_3_PASSIVE_SOIL_GAS_STUDY.MXD MARTESE 6/28/2010 12:16:42

Legend

- Passive Soil Gas Locations (2007)
- Expanded Site 86 Boundary (March 2010)

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 3-3
Passive Soil Gas Locations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_3_4_DPT_SAMPLING_LOCS.MXD MARTESE 6/28/2010 12:59:17

Legend

- Direct Push Groundwater Sampling Locations 2007
- Direct Push Groundwater Sampling Locations 2008
- Direct Push Groundwater Sampling Locations 2009
- Expanded Site 86 Boundary (March 2010)

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 3-4
DPT Groundwater Sampling Locations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

Notes:
IR86-IS46 and IR86-IS47 collected for lithology only.

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_3_5_SW_SD_SOIL_SAMPLE_LOCS.MXD MARTESE 6/28/2010 14:37:04

Legend

- Surface/Subsurface Soil Sample Locations (2009)
- Surface Soil Sample Locations (2007)
- Surface Water and Sediment Sampling Locations
- Expanded Site 86 Boundary (March 2010)

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 3-5
Surface Water, Sediment, and Soil Sample Locations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

SECTION 4

Site Physical Characteristics

The section summarizes the physical characteristics of MCB CamLej and Site 86 in particular. The information presented in this section is based upon previous field investigations, as well as the ESRI field activities discussed in Section 3.

4.1 Regional and Facility-wide Physiography, Climate, and Surface Water Hydrology

The MCB CamLej facility lies within the Tidewater region of the Atlantic Coastal Plain Physiographic Province in North Carolina (**Figure 4-1**). This province extends from Georgia to Long Island, New York. The physiography of MCB CamLej and the surrounding area is typical of the Atlantic Coastal Plain, with stepped terraces consisting of wide, gently eastward-sloping plains separated by linear, steeper, northward- and eastward-facing scarps. The surface topography within MCB CamLej ranges from sea level to approximately 70 feet above mean sea level (msl), with the majority of the Base ranging between 20 and 40 feet above msl.

Climatic conditions within southeastern North Carolina, including MCB CamLej, are generally characterized by short, mild winters and long, hot summers. Average annual net precipitation is approximately 50 inches. Ambient air temperatures generally range between 33 and 53 degrees Fahrenheit (°F) in the winter months and between 71°F and 88°F during the summer months. Winds are generally south to southwesterly in the summer and north to northwesterly in the winter.

The New River and its tributaries bisect MCB CamLej, and the land surface generally slopes toward the New River with a grade of approximately 0.5 percent.

4.2 Site 86 Topography, Drainage, and Surface Features

Site 86 consists of the northern portion of the MCAS flight line and the surrounding air station support buildings. The topographic relief within Site 86 ranges from 8 to 20 feet above msl, with a slight slope to the east toward the New River. The area has been developed so that stormwater runoff from the western portion of the site flows east through storm drains that discharge to a drainage ditch east of Building AS508. Stormwater from the northern portion of the site flows into the retention pond east of Building AS316. Stormwater from Site 86 eventually discharges into the New River approximately three-quarters of a mile to the east. Since the northern and western portions of the site are generally paved or developed, it is anticipated that infiltration rates are low. However, higher rates of infiltration are expected in the northeast grass area. The general hydrologic features of the area surrounding Site 86 are shown in **Figure 4-2** and the stormwater retention ponds and drainage ditch are shown on **Figure 3-2.**

4.3 Geology and Hydrogeology

4.3.1 General Regional Geologic and Hydrogeologic Framework

MCB CamLej is underlain by an eastward-thickening wedge of marine and non-marine sediments ranging in age from early Cretaceous to Holocene. These sediments extend from the Fall Line (western boundary of Atlantic Coastal Plain Physiographic Province) and dip to the southeast toward the coast. Along the coastline, several thousand feet of interlayered and unconsolidated sediments consisting of gravel, sand, silt, clay deposits, calcareous clays, shell beds, sandstone, and limestone mantle the pre-Cretaceous crystalline basement rock. Minor amounts of detrital carbonate shells and secondary minerals such as glauconite, siderite, and chlorite often distinguish these sedimentary units.

Coastal Plain sedimentation and deposition were controlled by fluctuations in sea level on a subsiding continental margin in marine and near-shore environments (Winner and Coble, 1989). Confining units associated with specific aquifers within the Coastal Plain region are composed of less permeable beds of clay and silt. Within Onslow County, seven aquifers and their associated confining units, including the surficial, Castle Hayne, Beaufort, Peedee, Black Creek, Upper Cape Fear, and Lower Cape Fear, are present in approximately 1,500 feet of sedimentary sequence that overlies the basement rock (Cardinell et al., 1993). **Table 4-1** presents a summary of the Quaternary and Tertiary geologic and hydrogeologic units of the North Carolina Coastal Plain.

Recharge of aquifers within the Coastal Plain region generally occurs within interstream areas, and has been estimated in the range of 5 to 21 inches yearly (Heath, 1989). Natural discharge of groundwater from the Coastal Plain aquifer system is generally into streams, swamps, and lakes. Evapotranspiration from the soil zone and upward leakage through confining units into streams, estuaries, swamps, and the ocean contribute to groundwater discharge. The New River estuary serves as the principal discharge area for groundwater from the Castle Hayne aquifer within the vicinity of MCB CamLej (Harned et al., 1989).

4.3.2 Site-Specific Geologic and Hydrogeologic Framework

The geological and hydrogeologic characteristics of Site 86 are based on ESRI field activities and the results of previous investigations. **Figure 4-3** illustrates the locations of two perpendicular geologic cross-sections that traverse Site 86. Cross-section A-A′ trends west to east and crosses the central portion of Site 86 (**Figure 4-4**), while cross-section B-B′ trends north to south along the northeast grass area of the flight line (**Figure 4-5**). Both sections include the stratigraphic sequence of the undifferentiated and River Bend Formations described below.

Site Geology

The surficial deposits present at Site 86 belong to the undifferentiated Formation and are shown to vary in thickness from 30 feet in the western portion of the site (IR86-MW52 cluster) to approximately 40 feet near the central portion of the site (IR86-MW58 cluster). These deposits consist of mostly sand and silty sand, with lenses of sandy clay in the central and eastern portion of the site, as shown on cross-section A-A′ (**Figure 4-4**). Across the B-B′ cross-section, the undifferentiated formation consists of clay, sand, and silty sand layers with a variable thickness of approximately 34 feet bgs at IR86-MW34IW to 24 feet bgs at the

IR86-MW59 cluster. In this portion of Site 86, the undifferentiated formation consists of a clay layer that extends from the surface to approximately 10 feet bgs (**Figure 4-5**).

The undifferentiated Formation overlies the River Bend Formation, indicating a depositional hiatus between the erosion of the River Bend and the deposition of the undifferentiated. The disconformity between the two geologic units in part explains the absence of the Yorktown, Eastover, and Pungo River Formations in the vicinity of Site 86 (Cardinell et al., 1993).

In the vicinity of Site 86, the River Bend Formation consists of weakly to completely cemented sandy limestone, which was observed at approximately 30 feet to 40 feet bgs and ranged in thickness from 15 feet in the western portion of the site to 45 feet in the northeast grass area, as shown on **Figure 4-4**. Weakly to completely cemented sandy limestone was encountered at approximately 24 feet to 34 feet bgs, and extends to a maximum depth of approximately 64 feet bgs (IR86-MW59 cluster). The fossilized shells observed in this limestone are an identifying characteristic of the River Bend Formation (Cardinell et al., 1993). The proportion of shell fragments is greatest at approximately 45 to 55 feet bgs.

Below the cemented sands of the River Bend Formation, a greenish gray sand with some silty sand lenses and fossils was observed at approximately 40 feet bgs in the western portion of the site (IR86-MW40IW) and at approximately 75 feet bgs in the eastern portion of the site (IR86-IS117), as shown in **Figure 4-4.** This greenish gray sand was not encountered in the northern portion of the site, but was observed at approximately 60 feet bgs (IR86-MW59DW) in the southern portion of the site. This unit was observed to the borehole termination depth of approximately 90 feet bgs during installation of the middle Castle Hayne aquifer monitoring wells. The River Bend Formation overlies the Castle Hayne Formation.

Site Hydrogeology

The current and previous investigations have been limited to the surficial and Castle Hayne Aquifers, which occur in the undifferentiated formation and River Bend Formation, respectively. The surficial aquifer, which is under unconfined conditions (water table aquifer), occurs within the sediments of the undifferentiated formation, typically within 10 feet of the surface, and extends to a depth of 35 feet bgs.

Locally, the upper 20 feet (35 to 55 feet bgs) of the River Bend Formation consists of weakly to completely cemented, fossiliferous, sandy limestone, and has been designated at MCB CamLej as the upper Castle Hayne aquifer. The middle Castle Hayne aquifer underlies the carbonate-rich zone, and is characterized by unconsolidated gray to olive green silty sand with trace amounts of fossil fragments. The middle Castle Hayne aquifer was encountered at an approximate depth of 55 feet bgs and extends to a depth of 90 feet bgs.

The Castle Hayne confining unit, typically represented within the lower portion of the Belgrade Formation, was not encountered at Site 86. The absence of a laterally continuous confining unit allows direct hydraulic communication between the surficial and Castle Hayne aquifers.

Hydrology

Groundwater elevations measured in March 2010 (**Table 4-2**) ranged from 3.90 feet above msl (IR86-MW64) to 16.33 feet above msl (USTCSFF-DW06). The western portion of the site

exhibited the highest groundwater elevations. **Figure 4-6**, **Figure 4-7**, and **Figure 4-8** illustrate the potentiometric surfaces of the surficial, upper Castle Hayne, and middle Castle Hayne aquifers, respectively. In general, the groundwater flow direction within the surficial aquifer and the upper/middle Castle Hayne aquifer zones is toward the east or northeast.

The static groundwater elevations and the horizontal hydraulic conductivities of the surficial, upper Castle Hayne, and middle Castle Hayne aquifers are summarized below:

Aquifer	Highest Static Water Level Elevation (feet msl)	Lowest Static Water Level Elevation (feet msl)	Horizontal Hydraulic Gradient (ft/ft)*
Surficial	14.76 (IR86-MW52)	3.9 (IR86-MW64)	0.003
upper Castle Hayne	16.33 (USTCSFF-DW06)	5.08 (IR86-MW63IW)	0.003
middle Castle Hayne	14.28 (IR86-MW42DW)	6.57 (IR86-MW59DW)	0.004

* measured between monitoring wells IR86-MW41 and IR86-MW60
* measured between monitoring wells IR86-MW46IW and IR86-MW34IW
* measured between monitoring wells IR86 MW42DW and IR86-MW31DW

Vertical gradients were calculated between adjacent wells screened in the surficial and upper Castle Hayne aquifers and the upper Castle Hayne and middle Castle Hayne aquifers using groundwater elevation data collected in March 2010 (**Table 4-3**). The vertical hydraulic potential is calculated using paired wells and by dividing the difference in water level elevations by the vertical distance between the center points of the screened intervals. Because of the presence of vertical hydraulic gradients, the potential direction of contaminant migration within or between aquifers can be estimated. Throughout most of the site, downward vertical gradients were calculated to exist between the surficial and upper Castle Hayne aquifer zones, ranging from 0.002 foot per foot (ft/ft) to 0.112 ft/ft. Slight upward vertical gradients were estimated to exist north of Hangar AS504 and along the drainage ditch, adjacent to the flight line. Within the Castle Hayne aquifer, slight downward vertical gradients exist between the upper Castle Hayne and middle Castle Hayne aquifer zones ranging from 0.003 ft/ft to 0.049 ft/ft.

Aquifer Properties

The hydraulic properties of the surficial aquifer were evaluated during RI activities (Baker, 1996) and during the October 2008 SRI field activities. Based on grain size analysis performed on soil samples collected from the surficial, upper Castle Hayne, and middle Castle Hayne aquifers by ASTM method D-422, the following grain size ratios were observed:

Aquifer	Depth of Sample Interval (ft bgs)	% Sand	% Silt	% Clay
Surficial	28-32 (IR86-PTW-1)	67.9	16.9	15.2
Surficial	30-35 (IR86-IS64)	79.2	12.0	8.8
Upper Castle Hayne	53-57 (IR86-PTW-1)	75.4	16.7	7.9
Middle Castle Hayne	85-90 (IR86-IS64)	89.9	6.2	3.9

An effective porosity value of 30 percent was used (estimated from Fetter, 1986), based on a silty sand composition. Based on in situ aquifer testing (slug tests) and the results of the aquifer constant rate pumping test, the following hydraulic conductivity values were estimated: in the surficial aquifer 2.8 feet per day (ft/day) to 40 ft/day, with a geometric mean of 6.95 ft/day; in the upper Castle Hayne aquifer, 1.26 ft/day to 28 ft/day, with a geometric mean of 3.15 ft/day, and in the middle Castle Hayne aquifer, 0.06 ft/day to 3 ft/day, with a geometric mean of 0.45 ft/day. The technical literature (Cardinell et al., 1993) includes a range of hydraulic conductivity for the Castle Hayne aquifer of 14 ft/day to 91 ft/day.

Using an effective porosity value for silty sand of 30 percent (Fetter, 1986), linear seepage velocities for the surficial aquifer were estimated to range from 0.028 to 0.400 feet/day (10 to 146 feet/year), from 0.013 to 0.28 feet/day (5 to 102 feet/year) in the upper Castle Hayne aquifer, and from 0.001 to 0.04 feet/day (0.4 to 15 feet/year) in the middle Castle Hayne aquifer.

4.3.3 Regional Water Usage

Regionally, in southeastern North Carolina, the Castle Hayne aquifer may be utilized as a domestic water supply, or used to water lawns and/or fill swimming pools. Potable water available to MCB CamLej and the surrounding residential area is provided by water supply wells that pump groundwater from the Castle Hayne aquifer. Although freshwater is present within the surficial, Castle Hayne, Beaufort, and Peedee aquifers, all of which underlie MCB CamLej, only the Castle Hayne is used by MCB CamLej as a water supply source (Cardinell et al., 1993).

Groundwater at MCB CamLej is pumped from approximately 68 active water supply wells. The most recent Wellhead Protection Plan (AHEC, 2002) indicates that 13 public supply water wells are located within a 1-mile radius of the site (**Figure 4-9**). At that time, seven of the wells were active; however, all of the potable supply wells are located upgradient of the site. The seven active wells include PSW-TC1251 (screened from 120 to 155 feet bgs with a 175-gpm yield in 2001), PSW-TC1253 (screened from 120 to 170 feet bgs with a 195-gpm yield in 2001), PSW-AS190 (180-foot depth with a yield of 159 gpm in 2001), PSW-AS191 (180-foot depth with a yield of 285 gpm in 2001), PSW-AS4140 (193-foot deep with a yield of 110 gpm in 2001), PSW-AS4150 (193-foot depth with a yield of 115 gpm in 2001), and PSW-AS5001 (193-foot deep with a yield of 50 gpm in 2001). Well screen information is not available for PSW-AS190, PSW-AS191, PSW-AS4140 and PSW-AS4150, PSW-AS5001.

TABLE 4-1
Geologic and Hydrogeologic Units of the Inner Coastal Plain
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Geologic Units			Hydrogeologic Units
System	**Series**	**Formation**	**Aquifer and Confining Unit**
Quaternary	Holocene	Undifferentiated	Surficial Aquifer
	Pleistocene		
Tertiary	Pliocene	Yorktown Formation[1]	Yorktown confining unit[1] Yorktown Aquifer[1]
	Miocene	Eastover Formation[1]	Yorktown Aquifer[1] Pungo River confining unit[1]
		Pungo River Formation[1]	Pungo River confining unit[1] Pungo River Aquifer[1]
		Belgrade Formation	Castle Hayne confining unit
	Oligocene	River Bend Formation	Castle Hayne Aquifer
	Eocene	Castle Hayne Formation	Castle Hayne Aquifer

Notes:

[1] Geologic and hydrogeologic units not present beneath MCB Camp Lejeune.
Source: Cardinell et al., 1993.

Generated by: K. Howell/CLT
Created by: T.Grim/CLT

TABLE 4-2
Groundwater Elevations - March 2010
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well Identification	Date	Depth to Water (ft BTOC)	TOC Elevation (ft msl)	Well Depth (ft)	Water Elevation (ft msl)	Aquifer
IR86-MW01	3/13/2010	6.69	18.33	17.82	11.64	Surficial
IR86-MW02IW	3/13/2010	6.71	17.80	32.20	11.09	Surficial
IR86-MW03	3/13/2010	5.48	17.14	16.07	11.66	Surficial
IR86-MW04IW	3/13/2010	5.89	17.10	32.55	11.21	Surficial
IR86-MW05	3/13/2010	4.79	18.37	17.14	13.58	Surficial
IR86-MW06IW	3/14/2010	4.96	18.15	32.43	13.19	Surficial
IR86-MW07	3/14/2010	5.29	19.08	17.77	13.79	Surficial
IR86-MW08IW	3/13/2010	5.23	18.86	32.53	13.63	Surficial
IR86-MW09	3/13/2010	6.36	17.44	16.88	11.08	Surficial
IR86-MW10IW	3/13/2010	5.97	16.89	30.82	10.92	Surficial
IR86-MW11	3/13/2010	4.82	18.75	17.44	13.93	Surficial
IR86-MW12IW	3/13/2010	5.15	17.68	30.00	12.53	Surficial
IR86-MW13	3/13/2010	3.62	15.82	14.52	12.20	Surficial
IR86-MW14IW	3/13/2010	5.27	15.85	30.00	10.58	Surficial
IR86-GW15IW	3/14/2010	5.10	17.50	57.00	12.40	Upper Castle Hayne
IR86-MW15DW	3/14/2010	5.10	15.43	100.00	10.33	Middle Castle Hayne
IR86-MW16DW	3/14/2010	5.86	15.76	92.20	9.90	Upper Castle Hayne
IR86-MW17DW	3/13/2010	5.12	16.18	108.00	11.06	Middle Castle Hayne
IR86-MW18DW	3/13/2010	5.81	16.83	108.50	11.02	Middle Castle Hayne
IR86-MW22IW	3/14/2010	6.39	16.72	65.00	10.33	Upper Castle Hayne
IR86-MW27IW	3/13/2010	3.27	14.85	30.50	11.58	Surficial
IR86-MW30IW	3/13/2010	5.15	16.51	62.00	11.36	Upper Castle Hayne
IR86-MW31IW	3/13/2010	6.21	14.67	53.18	8.46	Upper Castle Hayne
IR86-MW31DW	3/13/2010	5.96	14.70	88.62	8.74	Middle Castle Hayne
IR86-MW33IW	3/13/2010	4.92	11.71	45.00	6.79	Upper Castle Hayne
IR86-MW34IW	3/13/2010	5.15	10.92	45.00	5.77	Upper Castle Hayne
IR86-MW38IWA	3/13/2010	6.40	15.55	35.00	9.15	Surficial
IR86-MW38IWB	3/13/2010	6.55	15.60	45.00	9.05	Upper Castle Hayne
IR86-MW39	3/13/2010	3.96	18.72	30.00	14.76	Surficial
IR86-MW40	3/13/2010	6.17	20.28	30.00	14.11	Surficial
IR86-MW40IW	3/13/2010	6.32	19.36	45.00	13.04	Surficial
IR86-MW41	3/13/2010	4.01	17.67	30.00	13.66	Upper Castle Hayne
IR86-MW42IW	3/13/2010	3.03	17.44	50.00	14.41	Upper Castle Hayne
IR86-MW42DW	3/13/2010	3.11	17.39	95.00	14.28	Middle Castle Hayne
IR86-MW43IW	3/13/2010	4.04	17.78	52.00	13.74	Upper Castle Hayne
IR86-MW44IW	3/13/2010	4.32	18.21	52.00	13.89	Upper Castle Hayne
IR86-MW44DW	3/13/2010	4.77	18.09	95.00	13.32	Middle Castle Hayne
IR86-MW45DW	3/13/2010	4.54	18.22	95.00	13.68	Middle Castle Hayne
IR86-MW46IW	3/13/2010	4.98	17.69	50.00	12.71	Upper Castle Hayne
IR86-MW47	3/13/2010	6.21	18.10	30.00	11.89	Surficial
IR86-MW47IW	3/13/2010	6.45	18.14	50.00	11.69	Upper Castle Hayne
IR86-MW48	3/14/2010	6.82	17.62	30.00	10.80	Surficial
IR86-MW48IW	3/14/2010	7.25	18.44	52.00	11.19	Upper Castle Hayne
IR86-MW49DW	3/14/2010	6.72	17.17	95.00	10.45	Surficial
IR86-MW50IW	3/13/2010	6.02	17.07	52.00	11.05	Upper Castle Hayne
IR86-MW51DW	3/14/2010	6.26	15.87	95.00	9.61	Middle Castle Hayne
IR86-MW52	3/14/2010	4.75	19.51	30.00	14.76	Surficial
IR86-MW52IW	3/14/2010	4.83	18.04	48.00	13.21	Upper Castle Hayne
IR86-MW54IW	3/14/2010	3.08	15.80	45.00	12.72	Upper Castle Hayne
IR86-MW55IW	3/14/2010	7.04	16.72	45.00	9.68	Upper Castle Hayne
IR86-MW56	3/14/2010	6.15	15.43	35.00	9.28	Surficial

TABLE 4-2
Groundwater Elevations - March 2010
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Well Identification	Date	Depth to Water (ft BTOC)	TOC Elevation (ft msl)	Well Depth (ft)	Water Elevation (ft msl)	Aquifer
IR86-MW56DW	3/14/2010	6.63	15.28	90.00	8.65	Middle Castle Hayne
IR86-MW58	3/13/2010	9.39	16.83	35.00	7.44	Surficial
IR86-MW58IW	3/13/2010	9.15	16.89	55.00	7.74	Upper Castle Hayne
IR86-MW58DW	3/13/2010	9.35	16.97	91.00	7.62	Middle Castle Hayne
IR86-MW59	3/13/2010	5.26	12.10	35.00	6.84	Surficial
IR86-MW59IW	3/13/2010	5.43	12.41	56.00	6.98	Upper Castle Hayne
IR86-MW59DW	3/13/2010	5.61	12.18	90.00	6.57	Middle Castle Hayne
IR86-MW60	3/13/2010	6.17	12.43	35.00	6.26	Surficial
IR86-MW60IW	3/13/2010	6.30	12.33	55.00	6.03	Upper Castle Hayne
IR86-MW62	3/13/2010	7.65	13.04	35.00	5.39	Surficial
IR86-MW63	3/13/2010	6.98	12.15	36.00	5.17	Surficial
IR86-MW63IW	3/13/2010	7.13	12.21	56.00	5.08	Upper Castle Hayne
IR86-MW64	3/13/2010	3.30	7.20	35.00	3.90	Surficial
USTAS410N-MW07	2/19/2010	3.31	17.17	15.00	13.86	Surficial
USTAS410N-MW08	2/19/2010	2.85	16.59	15.00	13.74	Surficial
USTAS410N-MW12	2/19/2010	3.49	17.32	15.00	13.83	Surficial
USTAS410N-MW16	2/19/2010	3.85	17.03	50.00	13.18	Upper Castle Hayne
USTAS410N-MW18	2/19/2010	4.44	17.63	50.00	13.19	Upper Castle Hayne
USTAS410N-MW19	2/19/2010	3.04	16.96	19.50	13.92	Surficial
USTAS428-GW06	3/13/2010	6.64	15.85	50.00	9.21	Upper Castle Hayne
USTAS428-GW08	3/13/2010	2.55	16.40	12.00	13.85	Surficial
SWMU318-MW01	3/13/2010	4.81	17.53	30.00	12.72	Surficial
SWMU318-MW03	3/13/2010	4.01	17.57	30.00	13.56	Surficial
SWMU318-MW05	3/13/2010	4.17	17.18	30.00	13.01	Surficial
SWMU318-MW06	3/13/2010	7.30	19.39	30.00	12.09	Surficial
SWMU318-MW07	3/13/2010	3.24	17.32	24.00	14.08	Surficial
SWMU318-MW08	3/13/2010	4.42	17.79	30.00	13.37	Surficial
USTAS4141-MW13	3/15/2010	5.66	18.87	15.56	13.21	Surficial
USTCSFF-DW06	3/14/2010	6.44	22.77	42.50	16.33	Upper Castle Hayne
USTCSFF-MW24	3/14/2010	6.38	20.5	11.00	14.12	Surficial
USTCSFF-MW21	3/14/2010	6.04	20.7	14.00	14.66	Surficial

Notes:

BTOC - Below top of casing
ft msl - Feet above mean sea level

Generated by: K. Ramsey/CLT
Checked by: T. Grim/CLT

TABLE 4-3

Vertical Hydraulic Gradient Calculations - March 2010

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	TOC Elevation (ft msl)	Ground Surface Elevation (ft msl)	DTW (ft BTOC)	DTW (ft bgs)	Groundwater Elevation (ft msl)	Screened Interval (ft bgs)	Top of Screen Elevation (ft msl)	Bottom of Screen Elevation (ft msl)	Vertical Hydraulic Gradient (ft/ft)		Groundwater Flow Direction	
IR86-MW03	17.14	14.88	5.48	3.22	11.66	4 to 14	10.88	0.88	0.027		down	
IR86-MW04IW	17.10	14.21	5.89	3.00	11.21	20 to 30	-5.79	-15.79		0.002		down
IR86-MW18DW	16.83	14.13	5.81	3.11	11.02	103 to 108	-88.87	-93.87				
IR86-MW09	17.44	14.59	6.39	2.38	12.21	5 to 15	9.59	-0.41	0.112		down	
IR86-MW10IW	16.89	14.61	5.97	4.08	10.53	20 to 30	-5.39	-15.39				
IR86-MW38IWA	15.55	15.55	6.40	6.40	9.15	28 to 33	-12.45	-17.45	0.010		down	
IR86-MW38IWB	15.60	15.60	6.55	6.55	9.05	38 to 43	-22.40	-27.40				
IR86-MW15IW	17.50	15.88	5.10	3.48	12.40	45 to 55	-29.12	-39.12	0.049		down	
IR86-MW15DW	15.43	15.77	5.10	5.44	10.33	90 to 95	-74.23	-79.23				
IR86-MW42IW	17.44	17.91	3.03	3.50	14.41	45 to 50	-27.09	-32.09	0.003		down	
IR86-MW42DW	17.39	17.81	3.11	3.53	14.28	90 to 95	-72.19	-77.19				
IR86-MW44IW	18.21	18.41	4.32	4.52	13.89	45 to 50	-26.59	-31.59	0.013		down	
IR86-MW44DW	18.09	18.49	4.77	5.17	13.32	90 to 95	-71.51	-76.51				
IR86-MW47	18.10	18.06	6.21	6.17	11.89	20 to 30	-1.94	-11.94	0.009		down	
IR86-MW47IW	18.14	18.36	6.45	6.67	11.69	45 to 50	-26.64	-31.64				
IR86-MW48	17.62	18.18	6.82	7.38	10.80	20 to 30	-1.82	-11.82	0.018		up	
IR86-MW48IW	18.44	18.44	7.25	7.25	11.19	45 to 50	-26.56	-31.56				
IR86-MW58	16.83	17.44	9.39	10.00	7.44	24 to 34	-6.56	-16.56	0.015		up	
IR86-MW58IW	16.89	17.37	9.15	9.63	7.74	44 to 54	-26.63	-36.63		0.003		down
IR86-MW58DW	16.97	17.38	9.35	9.76	7.62	80 to 90	-62.62	-72.62				
IR86-MW59	12.10	12.59	5.26	5.75	6.84	25 to 35	-12.41	-22.41	0.007		up	
IR86-MW59IW	12.41	12.68	5.43	5.70	6.98	45 to 55	-32.32	-42.32		0.012		down
IR86-MW59DW	12.18	12.55	5.61	5.98	6.57	80 to 90	-67.45	-77.45				
IR86-MW60	12.43	12.72	6.17	6.46	6.26	25 to 35	-12.28	-22.28	0.011		down	
IR86-MW60IW	12.33	12.73	6.30	6.70	6.03	45 to 55	-32.27	-42.27				

Notes:

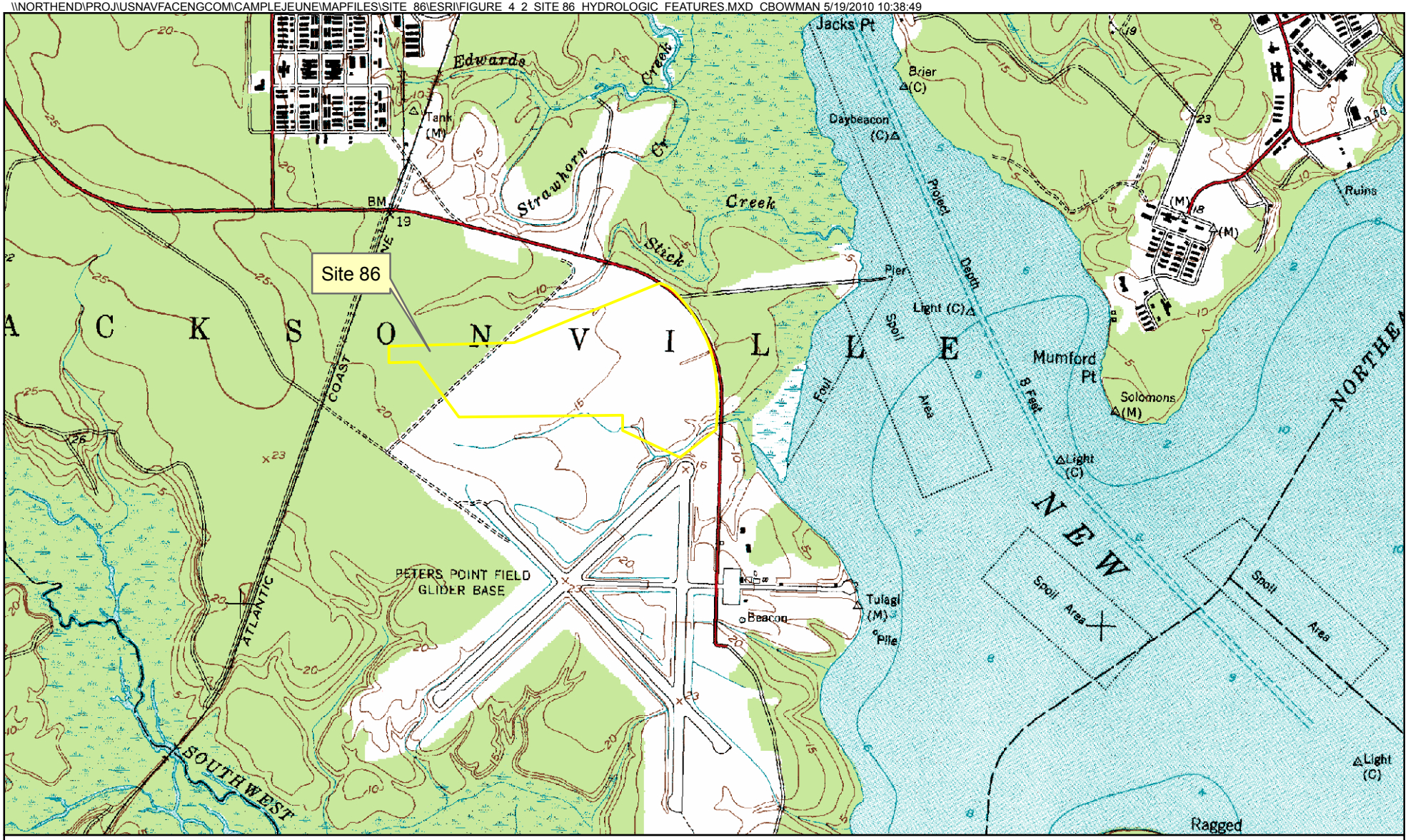
DTW - Depth to water
ft bgs - Feet below ground surface
ft BTOC - Feet below top of casing
ft msl - Feet above mean sea level
ft/ft - Feet per foot
TOC - Top of casing

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

Source: USGS Report by Cardinell, A.P., S.A. Berg, and O.B. Lloyd, Jr. (1993)

Figure 4-1
Physiographic Provinces of Eastern North Carolina
Operable Unit 20 (Site 86)
Expanded Supplemental Remedial Investigation
MCB CamLej
North Carolina

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_4_2_SITE 86_HYDROLOGIC_FEATURES.MXD CBOWMAN 5/19/2010 10:38:49



Legend

Site 86 Boundary (March 2010)

Topographic Contour (5-ft interval)

USGS in Universal Transvers Mercator (UTM)
North American Datum '27 (NAD 27)
USGS 7.5 Minute Quadrangle
Quad sheet 34077-F4-024
Year: 1952, Photoinspected 1988

N

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure 4-2
Site 86 Hydrologic Features
Operable Unit 20 (Site 86)
Expanded Supplemental Remedial Investigation
MCB CamLej
North Carolina

CH2MHILL

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_4_3_CROSS_SECTION_MAP.MXD CBOWMAN 5/19/2010 11:04:46

Legend

- Direct Push Sampling Locations (2008)
- Direct Push Sampling Locations (2009)
- Monitoring Well Locations
- Cross Section Location
- March 2010 Site 86 Boundary

N

0 175 350 700 Feet

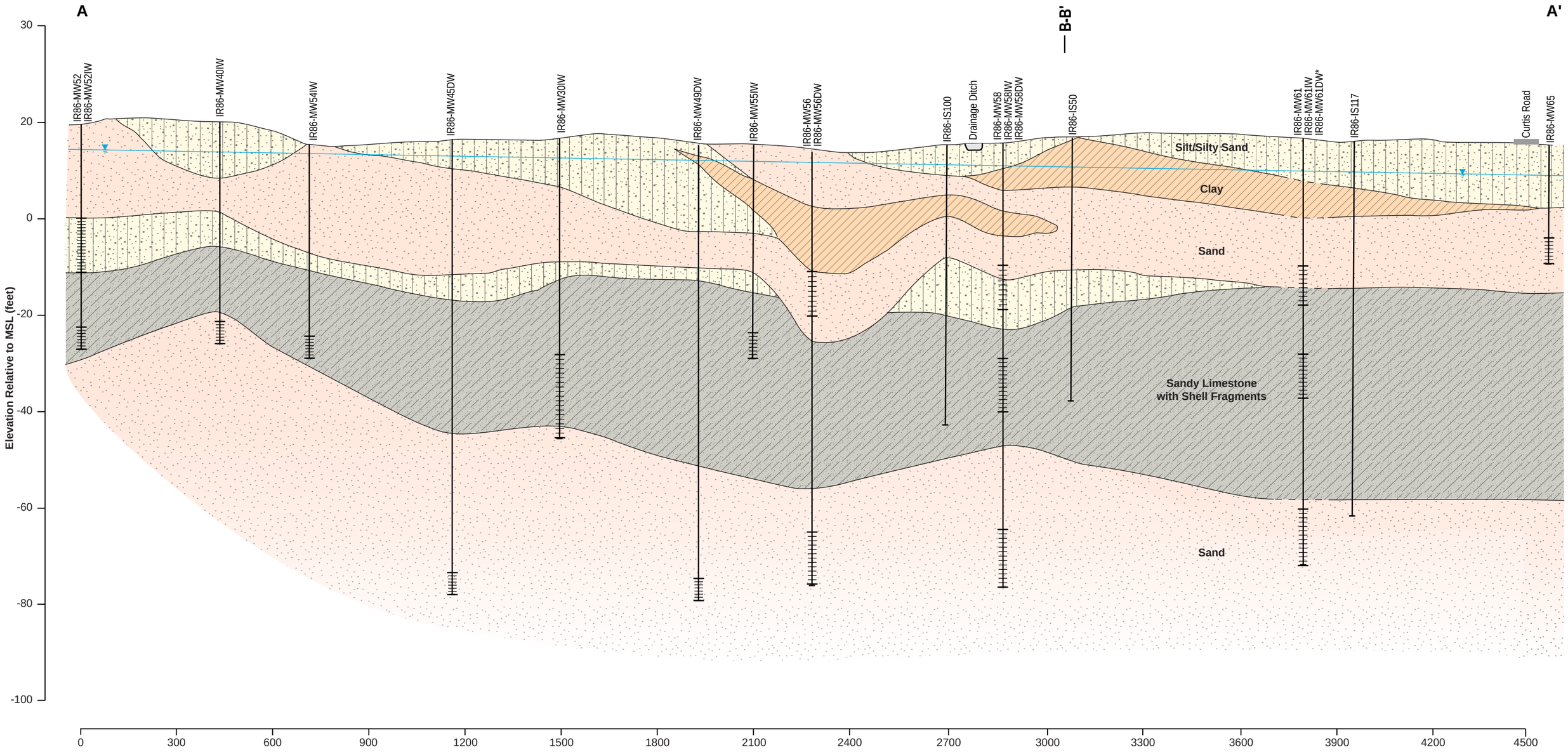
1 inch = 350 feet

Figure 4-3
Geologic Cross Section Location Map
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

ES051410163354MKE



LEGEND

- Silt/Silty Sand
- Clay
- Sand
- Partially to completely cemented sandy limestone with shell fragments
- Screened interval
- Soil boring
- Water table

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

Notes

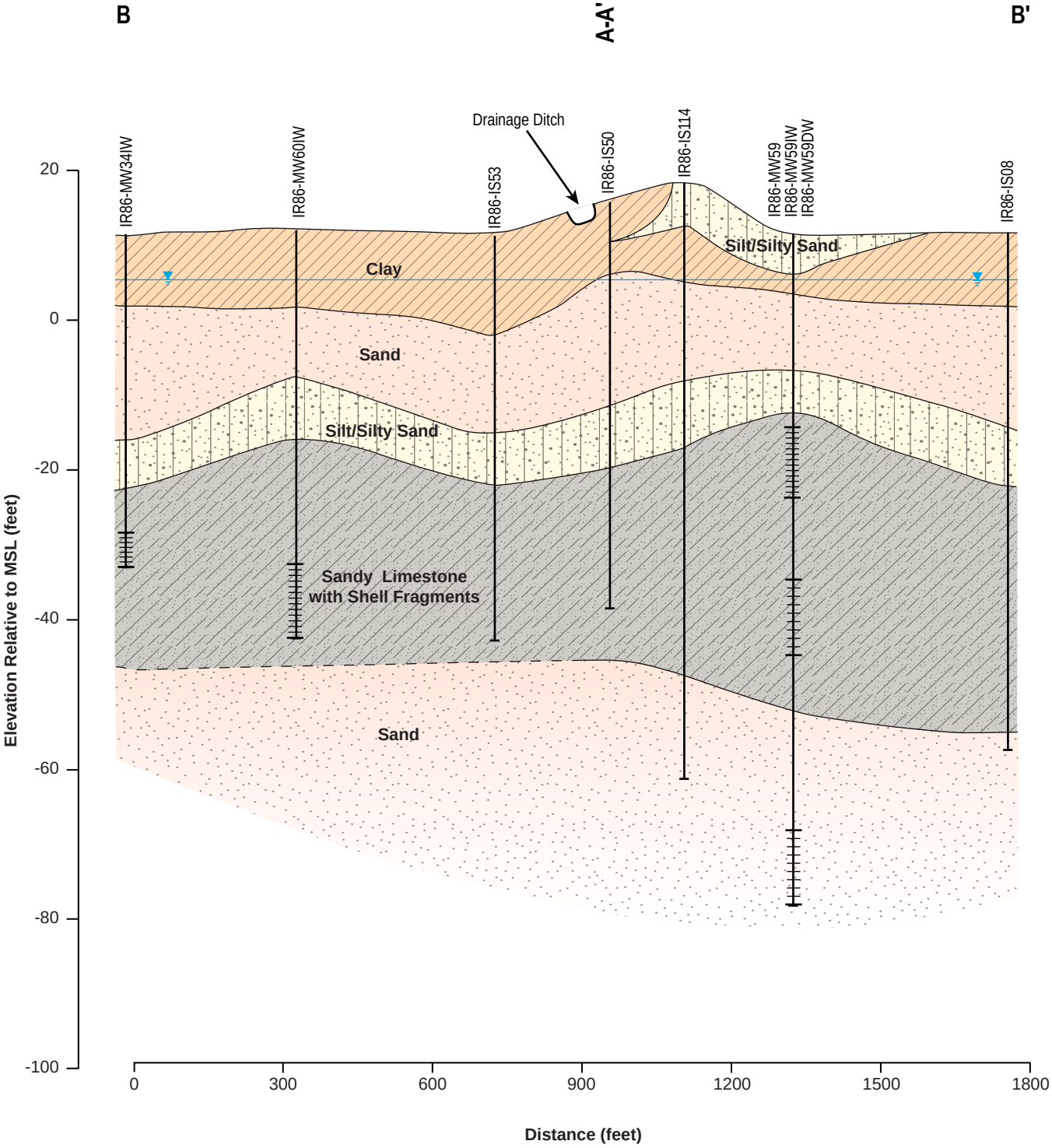
1) The depth and thickness of the subsurface strata indicated on this section (profile) were generalized from and interpolated between test locations. Subsurface conditions occurring at the other locations may differ from conditions occurring at indicated locations.

2) *IR86-MW61/61IW/61DW boring log not available.

Figure 4-4
Geologic Cross Section A-A'
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: J. Albano/CLT Checked by: K. Howell/CLT



LEGEND

- Silt/Silty Sand
- Clay
- Sand
- Partially to completely cemented sandy limestone with shell fragments
- Screened interval
- Soil boring
- Water Table

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

Note:

The depth and thickness of the subsurface strata indicated on this section (profile) were generalized from and interpolated between test locations. Subsurface conditions occurring at other locations may differ from conditions occurring at indicated locations.

Figure 4-5
Geologic Cross Section B-B'
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: J. Albano/CLT Checked by: K.Howell/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE 86\ESRI\FIGURE 4 6 POTENTIOMETRIC SURFACE SURFICIAL AQUIFER.MXD MRISSING 7/16/2010 08:45:10

Legend

- Monitoring Well
- Potentiometric Contours
- Groundwater Flow Direction
- Expanded Site 86 Boundary (March 2010)

6.84 - Water Level Elevations

Notes:
- Water level elevations are reported in feet above mean sea level
- Water levels were measured on March 13/14, 2010
- NM - Not Measured

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 4-6
Potentiometric Surface - Surficial Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE 86\ESRI\FIGURE 4 7 POTENTIOMETRIC SURFACE UPPER CASTLE HAYNE AQUIFER.MXD MRISSING 7/16/2010 08:49:23

Legend

- Monitoring Well
- Potentiometric Contours
- Groundwater Flow Direction
- Expanded Site 86 Boundary (March 2010)

5.98 - Water Level Elevations

Notes:
- Water level elevations are reported in feet above mean sea level
- Water levels were measured on March 13/14, 2010
- NM - Not Measured

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 4-7
Potentiometric Surface - Upper Castle Hayne Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_4_8_POTENTIOMETRIC_SURFACE_MIDDLE_CASTLE_HAYNE_AQUIFER.MXD MRISSING 6/30/2010 17:27:33

Legend

- Groundwater Sample Locations
- Potentiometric Contours
- Groundwater Flow Direction
- March 2010 Site 86 Boundary

6.57 - Water Level Elevations

Notes:
- Water level elevations are reported in feet above mean sea level
- Water levels were measured on March 13/14, 2010
- NM - Not Measured

N

0 175 350 700 Feet

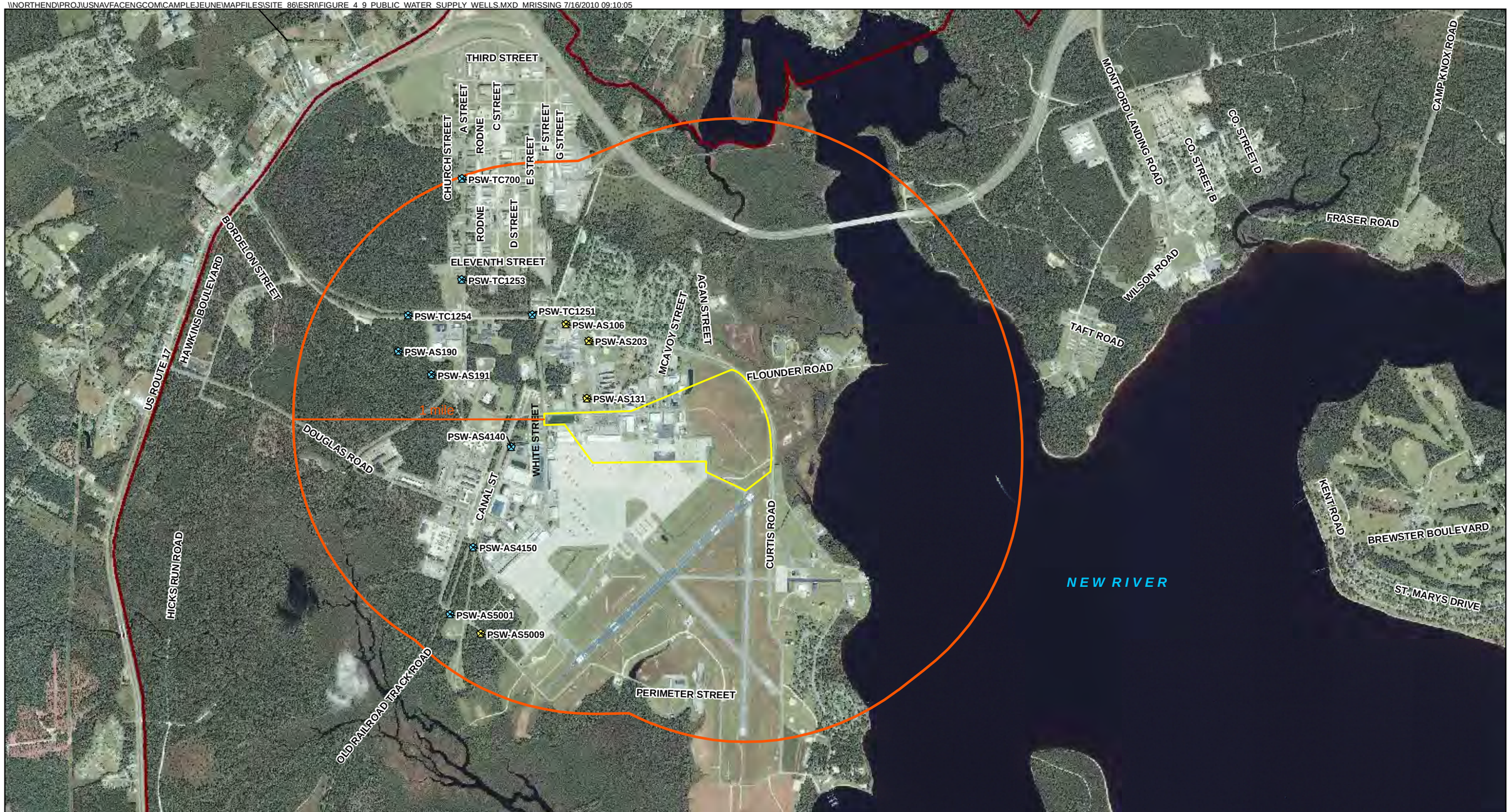
1 inch = 350 feet

Figure 4-8
Potentiometric Surface - Middle Castle Hayne Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_4_9_PUBLIC_WATER_SUPPLY_WELLS.MXD MRISSING 7/16/2010 09:10:05



Legend

- Inactive Public Supply Well
- Active Public Supply Well
- 1 Mile Radius
- Expanded Site 86 Boundary (March 2010)
- Installation Boundary

N

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure 4-9
Public Water Supply Wells
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

SECTION 5

Nature and Extent of Contamination

This section discusses the nature and extent of contamination at Site 86 and is organized in two sections. Section 5.1 discusses how the data are presented and evaluated, and defines the various criteria used to compare the concentration of compounds and analytes found in site media. The results of the sampling activities are described in Section 5.2.

5.1 Data Presentation and Evaluation

5.1.1 Data Presentation

The laboratory analytical data for surface water, sediment, and soil samples collected from 2006 to 2010 and groundwater data from 2009/2010 are presented in **Tables 5-1** through **5-7**. These tables summarize the maximum concentrations along with the frequency of detection for each group of samples.

The tables also identify results that exceed selected regulatory and human-health based criteria. This comparison is not a means of screening out potential contaminants from further consideration; that step is performed in the HHRA in Section 7. The purpose of this comparison is to help focus the subsequent discussions concerning nature and extent on those compounds that are likely to be most significant.

Figures are also presented, where appropriate, to show analyte detections in groundwater exceeding relevant comparison criteria. Additionally, contaminant isoconcentration maps are presented in plan and cross-sectional views to illustrate the distribution of the primary groundwater contaminants across the site.

During the 2006 baseline and 2007/2008 SRI field activities, passive soil gas, DPT groundwater (unvalidated screening level data), and groundwater data were collected from the site as the understanding of the nature and extent of contamination evolved. The data were used during decision-making processes that led to the current understanding of the nature and extent of contamination at Site 86 and are presented in **Appendix E**.

Laboratory analytical results, chain-of-custody forms, and data validation reports for the field data collected during the ESRI are provided in **Appendix F** and **Appendix G**.

5.1.2 Regulatory Comparison Criteria

Analytical results for soil, groundwater, sediment, and surface water samples collected during the ESRI were compared against regulatory standards or other applicable criteria. As discussed in Section 5.1.1, this comparison was performed to evaluate the nature and extent of contamination but not to eliminate compounds from further consideration.

Groundwater results were compared to the NCGWQS and (in the case of metals) Base background criteria. In accordance with Subchapter 2L of the North Carolina Administrative Code (NCAC) Title 15A, when the MCL for a constituent is more stringent than the NCGWQS, then the MCL will be referenced instead of the NCGWQS. If no NCGWQS or MCL values were available, then the results were compared to the USEPA

Adjusted Tapwater RSL and if USEPA Adjusted Tapwater RSL values were not available, then the results were compared to the Project Action Limits (PALs) identified in the SAP (CH2M HILL, 2009a).

Surface soil, subsurface soil, and sediment analytical data were compared to the NC SSLs and USEPA adjusted Residential Soil RSLs for Chemical Contaminants at Superfund Sites.

Surface water analytical data were compared to the NCAC 2B Surface Water Standards (NC 2Bs). If a constituent did not have an applicable NCAC 2B Surface Water Standard, the constituent was compared to the PALs identified in the SAP (CH2M HILL, 2009a).

Tables 5-1 through **5-7** list the chemical-specific regulatory criteria used to evaluate results for each media type.

- **NCGWQS**—The State of North Carolina, through rules of Subchapter 2L of NCAC Title 15A, establishes a series of classifications and water quality standards that are appropriate for the purpose of classifying groundwater in the state. NCGWQS are enforceable standards intended to provide a guidance level in preventing groundwater pollution above naturally occurring levels of specified chemical constituents and are based upon what is considered naturally occurring. The goal is to preserve and protect present and anticipated uses of groundwater.
- **MCLs for Groundwater**—MCLs are enforceable standards promulgated under the Safe Drinking Water Act for public water supplies consumed by a minimum of 25 persons. The MCLs are designed for the protection of human health, based on laboratory or epidemiological studies. They are designed to prevent adverse human health effects associated with a 70-year lifetime exposure for an average adult (70 kg) consuming 2 liters of water per day. Contaminants exceeding MCLs must be treated or removed from the public water supply prior to its potable use.
- **North Carolina Surface Water Quality Standards (NCSWQS)**—The State of North Carolina, through the rules of Subchapter 2B of the NCAC Title 15A, establishes a series of surface water classifications and standards that are enforceable and are intended to provide guidance in preventing surface water pollution above naturally occurring levels of chemical constituents**.** The goal of the NCSWQS is to preserve and protect present and future uses of surface water.
- **NC SSLs**—The Federal Remediation Branch (FRB) within the NCDENR Superfund Section of the Division of Waste Management, is responsible for oversight of NPL sites and NPL-caliber sites under special agreements with the USEPA. The FRB provides the SSLs as guidelines for achieving criteria that are protective of groundwater.
- **USEPA RSLs**—The USEPA Region 9 PRGs have been combined with similar risk-based screening levels used by Regions 3 and 6 into the RSLs for Chemical Contaminants at Superfund Sites table. The RSLs, adjusted for non-carcinogens to account for exposure to multiple constituents, are human health risk based goals for assessing industrial and residential properties.

5.1.3 Comparison to Background Concentrations

To identify constituents present in groundwater and soil that are reflective of a potential site-related release, concentrations of naturally occurring and anthropogenic compounds were compared to twice the mean Base background metals concentrations established for MCB CamLej (Baker, 2001).

5.2 Site 86 SRI Sampling Results

5.2.1 Surface Water

Surface water samples were collected from the western drainage pond during the 2008 SRI field activities. As the Site 86 boundary was expanded to include the northeast grass area near the flight line, surface water samples were collected from the drainage ditch near the northeast grass area. Surface water results presented in **Table 5-1** and surface water exceedances are presented on **Figure 5-1**.

Volatile Organic Compounds

Based on the analytical data for surface water samples collected from the western pond and drainage ditch, VOCs were not detected at concentrations that exceeded the NCSWQS.

Semivolatile Organic Compounds

- **Benzo(a)anthracene** was detected in 3 of 8 samples at concentrations ranging from 0.14 J µg/L (IR86-SW105 and IR86SW106) to 0.15 J µg/L (IR86-SW110) exceeding the NCSWQS of 0.0028 µg/L.
- **Benzo(a)pyrene** was detected in 1 of 8 samples at a concentration (0.034 J µg/L-IR86-SW110) exceeding the NCSWQS of 0.0028 µg/L.
- **Benzo(b)fluoranthene** was detected in 2 of 8 samples at a concentrations ranging from 0.046 J µg/L (IR86-SW105) to 0.083 J µg/L (IR86-SW110) exceeding the NCSWQS of 0.0028 µg/L.
- **Indeno(1,2,3-cd)pyrene** was detected in 1 of 8 samples at a concentration (0.068 J µg/L-IR86-SW106) exceeding the NCSWQS of 0.0028 µg/L.

Pesticides

- **Endosulfan II** was detected in 1 of 8 samples at a concentration (0.057 µg/L-IR86-SW106) exceeding the NCSWQS of 0.05 µg/L.

Metals

- **Manganese** was detected in 1 of 8 samples at a concentration (410 µg/L-IR86-SW110) exceeding the NCSWQS of 200 µg/L.
- **Cadmium** was detected in 1 of 8 samples at a concentration (2.1 µg/L-IR86-SW110) exceeding the NCSWQS of 2 µg/L.
- **Copper** was detected in 1 of 8 samples at a concentration (11 µg/L-IR86-SW110) exceeding the NCSWQS of 7 µg/L.

- **Zinc** was detected in 1 of 8 samples at a concentration (84 µg/L-IR86-SW110) exceeding the NCSWQS of 50 µg/L.
- **Iron** was detected in 4 of 8 samples at concentrations ranging from 1,300 µg/L (IR86-SW113) to 33,000 µg/L (IR86-SW110) exceeding the NCSWQS of 1,000 µg/L.

Surface Water Summary

SVOCs, pesticides, and metals were detected in surface water samples at concentrations that exceeded applicable NCSWQS only in the samples collected from the drainage ditch in the northeast grass area. The extent of surface water contamination is confined to the drainage ditch and does not appear to extend beyond surface water sample location IR86-SW110. Surface water sample location IR86-SW110 had the highest frequency of detection of SVOCs and metals at concentrations exceeding the NCSWQS (**Figure 5-1**).

5.2.2 Sediment

Sediment samples were collected from the western stormwater retention pond in 2008 and from the drainage ditch east of the flight line in 2009 and 2010. Laboratory analytical results from 2008, 2009, and 2010 are presented in **Table 5-2,** and exceedances of exceeded Residential RSLs, NC SSLs, Industrial RSLs, and twice the mean Base background concentrations on **Figure 5-2**.

Volatile Organic Compounds

VOCs were not detected at concentrations exceeding Residential RSLs, NC SSLs, or Industrial RSLs in sediment samples collected from the western stormwater retention pond or drainage ditch.

Semivolatile Organic Compounds

- **Benzo(a)anthracene** was detected in 5 of 10 samples at concentrations exceeding the Residential RSL (150 µg/kg), NC SSL (180 µg/kg), or Industrial RSL (2,100 µg/kg), ranging from 240 µg/kg (IR86-SD112) to 4,700 µg/kg (IR86-SD108).
- **Benzo(a)pyrene** was detected in 9 of 10 samples at concentrations exceeding the Residential RSL (15 µg/kg), NC SSL (59 µg/kg), or Industrial RSL (210 µg/kg), ranging from 19 µg/kg (IR86-SD02) to 6,200 µg/kg (IR86-SD108).
- **Benzo(b)fluoranthene** was detected in 7 of 10 samples at concentrations exceeding the Residential RSL (150 µg/kg), NC SSL (600 µg/kg), or Industrial RSL (2,100 µg/kg), ranging from 270 µg/kg (IR86-SD113) to 12,000 µg/kg (IR86-SD108).
- **Indeno(1,2,3-cd)pyrene** was detected in 7 of 10 samples at concentrations exceeding the Residential RSL (150 µg/kg), NC SSL (2,000 µg/kg), or Industrial RSL (2,100 µg/kg), ranging from 160 µg/kg (IR86-SD113) to 5,700 µg/kg (IR86-SD108).
- **Benzo(k)fluoranthene** was detected in 1 of 10 samples at a concentration (4,000 µg/kg-IR86-SD108) exceeding the Residential RSL of 1,500 µg/kg.
- **Dibenz(a,h)anthracene** was detected in 3 of 10 samples at concentrations exceeding the Residential RSL of 15 µg/kg, ranging from 19 µg/kg (IR86-SD107) to 100 µg/kg (IR86-SD112).

Pesticides/PCBs

- **Heptachlor epoxide** was detected in 2 of 10 samples at concentrations exceeding the NC SSL (0.82 µg /kg), ranging from 2 J µg/kg (IR86-SD02) to 3.4 J µg/kg (IR86-SD113).

Metals

- **Aluminum** was detected in 7 of 10 samples at concentrations exceeding the Residential RSL (7,700 mg/kg) and twice the mean Base background concentration (5,487 mg/kg), ranging from 9,400 mg/kg (IR86-SD107) to 17,000 mg/kg (IR86-SD109).
- **Antimony** was detected in 1 of 10 samples at a concentration (5.9 mg/kg-IR86-SD108), exceeding the Residential RSL of 3.1 mg/kg and twice the mean Base background concentration of 0.447 mg/kg.
- **Arsenic** was detected in 9 of 10 samples at concentrations exceeding twice the mean Base background concentration (0.626 mg/kg) and either the Residential Soil RSL (0.39 mg/kg), Industrial Soil RSL (1.6 mg/kg), or NC SSL (5.8 mg/kg), ranging from 1.1J mg/kg (IR86-SD01) to 9.7 mg/kg (IR86-SD112).
- **Cadmium** was detected in of 6 of 10 samples at concentrations exceeding twice the mean Base background concentration (0.033 mg/kg) and either the Residential RSL (7 mg/kg) or NC SSL (3 mg/kg), ranging from 3.1 mg/kg (IR86-SD106) to 8.2 mg/kg (IR86-SD110).
- **Chromium** was detected in 8 of 10 samples at concentrations exceeding twice the mean Base background concentration (6.05 mg/kg) and either the Residential RSL (0.29 mg/kg), Industrial RSL (5.6 mg/kg), or NC SSL (3.8 mg/kg), ranging from 9.7 mg/kg (IR86-SD02) to 36 mg/kg (IR86-SD112).
- **Cobalt** was detected in 6 of 10 samples at concentrations exceeding twice the mean Base background concentration (0.294 mg/kg) and either the Residential RSL (2.3 mg/kg) or Industrial RSL (30 mg/kg), ranging from 3.6 mg/kg (IR86-SD106) to 7.9 mg/kg (IR86-SD110).
- **Iron** was detected in 9 of 10 samples at concentrations exceeding twice the mean Base background concentration (3,245 mg/kg) and either the Residential RSL (5,500 mg/kg) or NC SSL (150 mg/kg), ranging from 3,400 mg/kg (IR86-SD107) to 30,000 mg/kg (IR86-SD112).
- **Manganese** was detected in 3 of 10 samples at concentrations exceeding twice the mean Base background concentration (13.7 mg/kg) and either the Residential RSL (180 mg/kg) or NC SSL (65 mg/kg), ranging from 66 mg/kg (IR86-SD112) to 110 mg/kg (IR86-SD105).
- **Selenium** was detected in 1 of 10 samples at a concentration (28 mg/kg-IR86-SD108), exceeding twice the mean Base background concentration of 0.563 mg/kg and the NC SSL of 2.1 mg/kg.
- **Thallium** was detected in 3 of 10 samples at concentrations exceeding twice the mean Base background concentration (0.36 mg/kg) and the Residential RSL (0.51 mg/kg), ranging from 0.69J mg/kg (IR86-SD113) to 3.4J mg/kg (IR86-SD108).

Sediment Summary

SVOCs, heptachlor epoxide, and metals were detected in sediment samples collected from the drainage ditch and stormwater retention pond at concentrations that exceeded Residential RSLs, NC SSLs, Industrial RSLs, and twice the mean Base background concentration. Impacted sediment collected from the northeast grass area is confined to the drainage ditch, and extends to the furthest downgradient sample location (IR86-SD113). The magnitude of the SVOC, pesticide, and metals concentrations in the sediment are generally low and their occurrence and distribution appear to be related to the industrial nature of the site.

5.2.3 Surface Soil

Surface soil samples were collected from the areas surrounding the original Site 86 boundary in 2007 and from the area east of the flight line in 2009. Laboratory analytical results are summarized in **Table 5-3,** and exceedances are presented on **Figure 5-3.**

Volatile Organic Compounds

VOCs were not detected in any surface soil sample at concentrations exceeding the applicable soil screening levels during the ESRI. VOCs were detected in soil samples collected during the initial SA discussed in .

Semivolatile Organic Compounds

- **Benzo(a)anthracene** was detected in 4 of 25 surface soil samples at concentrations exceeding either the Residential RSL (150 µg/kg) or NC SSL (180 µg/kg), ranging from 170 J µg/kg (IR86-SS06) to 260 µg/kg (IR86-SS104).
- **Benzo(a)pyrene** was detected in 9 of 25 surface soil samples at concentrations exceeding the Residential RSL (15 µg/kg), NC SSL (59 µg/kg), or Industrial RSL (210 µg/kg), ranging from 16J µg/kg (IR86-SS103) to 290 J µg/kg (IR86-SS114).
- **Benzo(b)fluoranthene** was detected in 4 of 25 surface soil samples at concentrations exceeding the Residential RSL (150 µg/kg), ranging from IR86-SS07 (170 J µg/kg) to 360 J µg/kg (IR86-SS114).
- **Indeno(1,2,3-cd)pyrene** was detected in 2 of 25 surface soil samples at concentrations exceeding the Residential RSL (150 µg/kg), ranging from 170 µg/kg (IR86-SS104) to 220J µg/kg (IR86-SS114).

Pesticides

- **Beta-BHC** was detected in 1 of 25 surface soil samples at a concentration (28 µg/kg-IR86-SS105), exceeding the NC SSL (1.2 µg/kg).
- **Dieldrin** was detected in 5 of 25 surface soil samples at concentrations exceeding the NC SSL (0.81 µg/kg), ranging from 0.88 J µg/kg (IR86-SS102) to 5.7 J µg/kg (IR86-SS104).
- **Heptachlor Epoxide** was detected in 2 of 25 surface soil samples at concentrations exceeding the NC SSL (0.82 µg/kg), ranging from 2.4 J µg/kg (IR86-SS105) to 8.4 µg/kg (IR86-SS113).

Metals

- **Aluminum** was detected in 8 of 25 surface soil samples at concentrations greater than twice the mean Base background concentration (5,487 mg/kg) and the Residential RSL (7,700 mg/kg), ranging from 7,800 J (mg/kg) (IR86-SS110) to 15,000 mg/kg (IR86-SS112).
- **Arsenic** was detected in 19 of 25 surface soil samples at concentrations greater than twice the mean Base background concentration (0.626 mg/kg), Residential RSL (0.39 mg/kg), or Industrial RSL (1.6 mg/kg), ranging from 0.63 J mg/kg (IR86-SS10) to 3.2 mg/kg (IR86-SS100).
- **Chromium** was detected in 20 of 25 surface soil samples at concentrations greater than twice the mean Base background concentration (6.05 mg/kg) and NC SSLs (3.8 mg/kg), Industrial RSLs (5.6 mg/kg), or Residential RSLs (0.29 mg/kg), ranging from 6.4 mg/kg (IR86-SS01) to 23 mg/kg (IR86-SS100).
- **Cobalt** was detected in 1 of 25 surface soil samples at a concentration (2.5 mg/kg-IR86-SS100) exceeding both twice the mean Base background concentration of 0.294 mg/kg and the Residential RSL of 2.3 mg/kg.
- **Iron** was detected in 10 of 25 surface soil samples at concentrations greater than twice the mean Base background concentration (3,245 mg/kg) and the NC SSL (150 mg/kg), ranging from 3,300 J mg/kg (IR86-SS102) to 4,500 J mg/kg (IR86-SS105).
- **Manganese** was detected in 1 of 25 surface soil samples at a concentration (79 mg/kg-IR86-SS102), exceeding twice the mean Base background concentration of 13.7 mg/kg and the NC SSL of 65 mg/kg.
- **Thallium** was detected in 1 of 25 surface soil samples at a concentration (0.53 J mg/kg-IR86-SS100), exceeding twice the mean Base background concentration of 0.36 mg/kg and the Residential RSLs of 0.51 mg/kg.

Other Contaminants

- **Cyanide** were detected in 4 of 10 surface soil samples collected in 2007 at concentrations exceeding the NC SSL (0.28 mg/kg), ranging from 0.19 J mg/kg (IR86-SS01) to 0.5 J mg/kg (IR86-SS10).

Surface Soil Summary

VOCs, SVOCs, pesticides, and metals are present at concentrations that exceed applicable soil screening levels. The magnitude of the SVOC and pesticide exceedances is generally low and their occurrence and distribution appear to be related to the industrial nature of the site. With the exception of arsenic, chromium, and manganese, the metals appear to be widespread and at concentrations that are generally consistent with naturally occurring levels.

5.2.4 Subsurface Soil

Subsurface soil samples were collected from the northeast grass area in 2009. Laboratory analytical results are presented in **Table 5-4** and exceedances of Residential RSLs, NC SSLs, Industrial RSLs, and twice the mean Base background concentration are presented on **Figure 5-4.**

Volatile Organic Compounds

VOCs were not detected in any subsurface soil sample at a concentration exceeding applicable Residential RSLs, NC SSLs, or Industrial RSLs.

Semivolatile Organic Compounds

SVOCs were not detected in any subsurface soil sample at a concentration exceeding the applicable soil screening levels.

Pesticides

- **Heptachlor epoxide** was detected in 1 of 16 subsurface soil samples at a concentration 6.7 J µg/kg-IR86-SS114, exceeding the NC SSL of 0.82 µg/kg.

Metals

- **Aluminum** was detected in 11 of 16 subsurface soil samples at concentrations greater than twice the mean Base background concentration (10,369 mg/kg) and the Residential RSL (7,700 mg/kg) ranging from 13,000 J (mg/kg) (IR86-SB111) to 52,000 mg/kg (IR86-SB110).
- **Arsenic** was detected in 3 of 16 subsurface soil samples at concentrations greater than twice the mean Base background concentration (2.12 mg/kg) and the Residential RSL (0.39 mg/kg) or Industrial RSL (1.6 mg/kg), ranging from 2.6 mg/kg (IR86-SB102) to 20 mg/kg (IR86-SB112).
- **Chromium** was detected in 6 of 16 subsurface soil samples at concentrations greater than twice the mean Base background concentration (14.5 mg/kg) and NC SSL (3.8 mg/kg), Industrial RSL (5.6 mg/kg), or Residential RSL (0.29 mg/kg), ranging from 15 mg/kg (IR86-SB107) to 63 mg/kg (IR86-SB110).
- **Cobalt** was detected in subsurface soil sample IR86-SB110 at a concentration of 2.8 mg/kg, greater than twice the mean Base background concentration (0.822 mg/kg) and Residential RSL (2.3 mg/kg).
- **Iron** was detected in 6 of 16 subsurface soil samples at concentrations greater than twice the mean Base background concentration (5,439 mg/kg), the NC SSL (150 mg/kg), and the Residential RSL (5,500 mg/kg), ranging from 6,600 J mg/kg (IR86-SB107) to 25,000 J mg/kg (IR86-SB112).
- **Vanadium** was detected in 2 of 16 subsurface soil samples at concentrations greater than twice the mean Base background concentration (17.2 mg/kg) and Residential RSL (39 mg/kg), ranging from 100 mg/kg (IR86-SB110) to 120 mg/kg (IR86-SB112).

Subsurface Soil Summary

Several metals are present in the subsurface soil at concentrations that exceed the Residential RSLs, NC SSLs, or Industrial RSLs, and twice the mean Base background concentrations. The magnitude of the metals exceedances is generally low and their occurrence and distribution appear to be related to the industrial nature of the site. The extent of pesticide impacts is limited to a single subsurface soil sample location.

5.2.5 Groundwater—Surficial Aquifer

Analytical laboratory data for surficial aquifer groundwater samples are presented in **Table 5-5**. Groundwater isoconcentration maps for TCE, cis-1,2-DCE, and VC are shown on **Figures 5-5** through **5-7,** respectively. A summary of the analytical detections that exceeded their respective NCGWQS is presented below.

Volatile Organic Compounds

Seven VOCs were detected at concentrations exceeding NCGWQS, as summarized below:

- **TCE** was detected in 8 of 25 samples at concentrations exceeding the NCGWQS (3.0 µg/L), ranging from 3.3 µg/L (IR86-MW41) to 260 µg/L (IR86-MW61).
- **Cis-1,2-DCE** was detected in 2 of 25 samples at concentrations exceeding the NCGWQS (70 µg/L), ranging from 79 µg/L (IR86-MW61) to 150J µg/L (IR86-MW58).
- **VC** was detected in 3 of 25 samples at concentrations exceeding the NCGWQS (0.03 µg/L), ranging from 1. 1 µg/L (IR86-27IW) to 68J µg/L (IR86-MW58).
- **PCE** was detected in 1 of 25 samples at a concentration (190 µg/L-IR86-MW10IW), exceeding the NCGWQS of 0.7 µg/L.
- **Benzene** was detected in 7 of 25 samples at concentrations exceeding the NCGWQS (1 µg/L), ranging from 1.2J µg/L (IR86-MW58) to 11 µg/L (IR86-MW52).
- **Methyl-tert-butyl ether (MTBE)** was detected in 1 of 25 samples at a concentration (66 µg/L-IR86-MW39), exceeding the NCGWQS of 20 µg/L.

Semivolatile Organic Compounds

- **Benzo(b)fluoranthene** was detected in 1 of 7 samples at a concentration (0.13 µg/L - IR86-MW60), exceeding the NCGWQS of 0.05 µg/L.

Metals

- **Iron** was detected in 3 of 7 samples at concentrations exceeding the NCGWQS (300 µg/L) and twice the mean Base background concentration (5,999 µg/L), ranging from 8,200 µg/L (IR86-MW60) to 11,000 µg/L (IR86-MW58).

5.2.6 Groundwater—Upper Castle Hayne Aquifer

Analytical laboratory data for upper Castle Hayne aquifer groundwater samples are presented in **Table 5-6**. Groundwater isoconcentration maps for TCE, cis-1,2-DCE, and VC are shown on **Figures 5-8** through **5-10**. A summary of the analytical results that exceeded their NCGWQS is presented below.

Volatile Organic Compounds

Five VOCs were detected at concentrations exceeding NCGWQS, as summarized below:

- **TCE** was detected in 9 of 26 samples at concentrations exceeding the NCGWQS (3 µg/L), ranging from 3.1 µg/L (IR86-MW38IWC) to 710 µg/L (IR86-MW58IW).
- **Cis-1,2-DCE** was detected in 7 of 26 samples at concentrations exceeding the NCGWQS (70 µg/L), ranging from 100J µg/L (IR86-MW58IW) to 350J µg/L (IR86-MW15IW).

- **1,1-DCE** was detected in 2 of 26 samples at concentrations exceeding the NCGWQS (7 µg/L), ranging from 7.6 µg/L (IR86-MW54IW) to 13 µg/L (IR86-MW55IW).
- **VC** was detected in 10 of 26 samples at concentrations exceeding the NCGWQS (0.03 µg/L), ranging from 0.4J µg/L (IR86-MW3IWC) to 140 µg/L (IR86-MW55IW).
- **Benzene** was detected in 7 of 26 samples at concentrations exceeding the NCGWQS (1 µg/L), ranging from 1.1 µg/L (IR86-MW30W) to 4 µg/L (IR86-MW15IW).

Semivolatile Organic Compounds

- **Benzo(b)fluoranthene** was detected in 1 of 5 samples at a concentration (0.11 µg/L-IR86-MW60IW), exceeding the NCGWQS of 0.05 µg/L.

5.2.7 Groundwater—Middle Castle Hayne Aquifer

Analytical laboratory data for middle Castle Hayne samples are presented in **Table 5-7**. The vertical extents of TCE, cis-1,2-DCE, and VC groundwater impacts are shown in cross-sectional view on **Figure 5-11** through **5-13**. A summary of the analytical detections that exceeded the NCGWQS is provided below.

Volatile Organic Compounds

- **PCE** was detected in 1 of 15 groundwater samples at a concentration (2.4 µg/L -IR86-MW19DW), exceeding the NCGWQS of 0.7 µg/L.

Semivolatile Organic Compounds

- **Benzo(a)pyrene** was detected in 1 of 4 groundwater samples at a concentration (0.2 µg/L-IR86-MW59DW), exceeding the NCGWQS of 0.005 µg/L.
- **Benzo(b)fluoranthene** was detected in 1 of 4 groundwater samples at a concentration (0.38J µg/L-IR86-MW59DW), exceeding the NCGWQS of 0.005 µg/L.
- **Dibenz(a,h)anthracene** was detected in 1 of 4 groundwater samples at a concentration (0.55J µg/L-IR86-MW59DW), exceeding the NCGWQS of 0.005 µg/L.
- **Indeno(1,2,3-cd)pyrene** was detected in 1 of 4 groundwater samples at a concentration (0.45J µg/L-IR86-MW59DW), exceeding the NCGWQS of 0.005 µg/L.

Metals

- **Chromium** was detected in 1 of 4 groundwater samples at a concentration (76 µg/L-IR86-MW59DW), exceeding twice the mean Base background concentration of 3.13 µg/L and NCGWQS of 10 µg/L.

Groundwater Summary

The surficial and upper Castle Hayne aquifers at Site 86 appear to be primarily impacted by chlorinated VOCs (TCE, cis-1,2-DCE, and VC) and benzene. The concentrations of benzo(b)fluoranthene that exceed the NCGWQS appear to be localized to the northeast grass area.

The distribution and relatively low concentrations, compared to the NCGWQS, of benzene appear to be consistent with historical releases from several UST sites at Site 86 and concentrations are near the NCGWQS.

Figures 5-5 through **5-7** depict the lateral distribution of TCE, cis-1,2-DCE, and VC in the surficial aquifer. The detections of TCE within the surficial aquifer, are the most laterally extensive and range in concentrations from 0.22 J µg/L to 260 µg/L. The westernmost plume, located near Building AS515/SWMU303-318, extends approximately between monitoring wells IR86-MW40 and IR86-MW41 on the industrial/flight line portion of the site. The central plume, located near the original Site 86 RI boundaries, extends between monitoring well IR86-MW-10IW and monitoring well IR86-MW47. The easternmost plume, located near the drainage ditch and Building AS508 on the eastern portion of the flight line, extends between monitoring wells IR86-MW58 and IR86-MW63. The horizontal extents of chlorinated VOC impacts in the surficial aquifer have been delineated to their respective NCGWQS.

Figures 5-8 through **5-10** depict the lateral distribution of TCE, cis-1,2-DCE, and VC in the upper Castle Hayne aquifer. The upper Castle Hayne groundwater plumes appear to contain generally higher levels of TCE, with concentrations ranging from 0.28 J µg/L to 710 µg/L. The westernmost plume, located near Building AS515/SWMU303-318, extends east from Building AS545 to Building AS541 over the industrial portion of the site. The northernmost plume, located near the original Site 86 RI boundaries, extends northeast from Building AS510 toward the northeast grass area. An isolated portion of the plume is located near monitoring well IR86-MW-34IW and may be a remnant of remedial efforts. The easternmost plume, located near the drainage ditch toward the eastern portion of the flight line, extends east from Building AS427 into the northeast grass area. As shown on the figures, the horizontal extents of chlorinated VOCs impacts in the upper Castle Hayne aquifer have been delineated to their respective NCGWQS.

Based on the data for groundwater samples collected from the middle Castle Hayne aquifer, the horizontal extents of chlorinated VOCs in the middle Castle Hayne aquifer have been delineated to their respective NCGWQS. However, PCE was detected in the sample collected from monitoring well IR86-MW19DW located in the industrial area, and several PAHs and chromium were detected in the sample collected from monitoring well IR86-MW59DW located in the northeast grass area at concentrations exceeding the applicable NCGWQS. These constituents were detected within an order of magnitude of the NCGWQS.

Cross-sectional views of the Site 86 geology and contaminant distribution (**Figures 5-11** through **5-13**) show that the vertical extents of the primary constituents of concern (COCs) (TCE, cis-1,2-DCE, and VC) have been delineated to their respective NCGWQS.

5.2.8 Natural Attenuation Indicator and Other Geochemical Parameters

Biodegradation of chlorinated solvents occurs when naturally occurring microorganisms break down chlorinated solvents into less toxic or non-toxic substances through an electron transfer process. Biodegradation of chlorinated solvents most often occurs under anaerobic conditions through the process of reductive dechlorination. In general, reductive dechlorination occurs by sequential dechlorination of the chlorinated hydrocarbon (i.e.,

PCE→TCE→DCE→VC→Ethene). In reductive dechlorination, the chlorinated hydrocarbon is used as the electron acceptor and organic carbon (either native or man-made) acts as an electron donor.

Under anaerobic conditions, anaerobic bacteria utilize additional electron acceptors in the following order of preference: nitrate ("nitrate reduction"), ferric iron ("iron reduction"), sulfate ("sulfate reduction"), and carbon dioxide ("methanogenesis"). Reductive dechlorination has been demonstrated under nitrate-reducing and sulfate-reducing conditions, but is most likely to occur under methanogenic conditions. Because reductive dechlorination occurs under conditions similar to those of the processes mentioned above, the concentrations of constituents (e.g., nitrate, ferric iron) can provide an indication of the potential for reductive dechlorination to occur. Biodegradation of some chlorinated organic compounds can also occur under aerobic conditions, such as aerobic oxidation of VC, and possibly cis-1,2-DCE.

During the ESRI monitoring well sampling events, field measurements and groundwater samples were collected from 65 monitoring wells to evaluate the geochemical characteristics of the surficial, upper Castle Hayne, and middle Castle Hayne aquifers. Field measurements collected during the purging of the wells included DO and ORP. After purging, ferrous iron, nitrate, and nitrite were evaluated in the field. Additionally, groundwater samples were collected and submitted for laboratory analysis of geochemical parameters that included alkalinity, chloride, sulfate, sulfide, TOC, ferrous iron, methane, ethane, and ethane. Concentration trends in the geochemical parameters can be used to evaluate the extent to which biodegradation of VOCs is occurring at the site.

A summary of NAIPs from the 2009 to 2010 ESRI monitoring well sampling events is provided in **Tables 5-8, 5-9,** and **5-10.** A more detailed discussion of each of the NAIPs is presented below.

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used by microbes for the biodegradation of organic carbon. Generally, DO concentrations below 0.5 milligrams per liter (mg/L) are required for anaerobic bacteria necessary for reductive dechlorination to exist.

The DO concentrations recorded during the Site 86 ESRI monitoring well sampling events indicate that anaerobic conditions exist in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers. Within the surficial aquifer, DO concentrations ranged from 0.12 mg/L (IR86-MW60) to 3.91 mg/L (IR86-MW52), with concentrations less than 0.5 mg/L in 20 of 25 monitoring wells. Within the upper Castle Hayne aquifer, DO concentrations ranged from 0.11 mg/L (IR86-MW42IW) to 2.43 mg/L (IR86-MW54IW), with concentrations less than 0.5 mg/L in 23 of 26 monitoring wells. Within the middle Castle Hayne aquifer, DO concentrations ranged from 0.06 mg/L (IR86-MW59DW) to 0.4 mg/L (IR86-MW42DW).

Based on the DO concentration data collected during the 2009/2010 groundwater monitoring event, it does not appear that aerobic conditions are present within the groundwater plumes. Additionally, concentrations of TCE daughter products in the surficial and upper Castle Hayne aquifers suggest that anaerobic conditions are present, and that reductive dechlorination is occurring to some extent.

Nitrate/Nitrite

When DO has been depleted, nitrate can be used as an electron acceptor in anaerobic degradation via denitrification. In denitrification, nitrate is reduced to produce nitrite. Therefore, decreased nitrate concentrations and increased nitrite concentrations relative to background levels indicate that nitrate reduction is occurring. However, at concentrations greater than 1 mg/L, nitrate can compete with chlorinated hydrocarbons as an electron acceptor.

Nitrate and nitrite were not detected in any of the surficial aquifer monitoring wells. The absence of nitrite suggests that denitrification is not a degradation pathway in the surficial aquifer.

Within the upper Castle Hayne aquifer, nitrate concentrations ranged from 0 mg/L to 8.8 mg/L at IR86-MW29IW, with nitrate concentrations less than 1.0 mg/L in 21 of 23 monitoring wells. Nitrite was not detected in any of the upper Castle Hayne monitoring wells.

Within the middle Castle Hayne aquifer, nitrate concentrations ranged from 0 mg/L to 4.4 mg/L at IR86-MW18DW, with nitrate concentrations less than 1.0 mg/L in 13 of 15 monitoring wells. Nitrite was not detected in any of the middle Castle Hayne monitoring wells.

Nitrate concentrations in the upper and middle Castle Hayne aquifers indicate that reducing conditions are present. However, the absence of nitrite in all of the samples collected suggests that denitrification is not a degradation pathway at Site 86.

Ferric/Ferrous Iron

In some cases, ferric iron [Fe(III)] is used as an electron acceptor during anaerobic degradation. During this process (termed “iron reduction”), Fe(III) is reduced to ferrous iron [Fe(II)]. Reduced ferric iron concentrations relative to background and Fe(II) concentrations greater than 1 mg/L are considered indicators of iron reduction.

During the Site 86 ESRI groundwater sampling, concentrations of Fe(II) ranged from 0 mg/L to 5.8 mg/L (IR86-MW38IWA) in the surficial aquifer, with concentrations greater than 1 mg/L in 20 of 24 monitoring wells. Within the upper Castle Hayne aquifer, Fe(II) concentrations ranged from 0.5 mg/L (IR86-MW59IW) to 4.0 (IR86-MW38IWC), with concentrations greater than 1 mg/L in 21 of 23 monitoring wells. Within the middle Castle Hayne aquifer, Fe(II) concentrations ranged from 0 mg/L to 2.10 mg/L (IR86-MW19DW), with concentrations greater than 1 mg/L in 3 of 15 monitoring wells.

Concentrations of Fe(III) ranged from 0 mg/L to 24.2 mg/L (USTAS410S-MW02) in the surficial aquifer. Within the upper Castle Hayne aquifer, Fe(III) concentration ranged from 0 mg/L to 14.2 mg/L (IR86-MW17IW). Within the middle Castle Hayne aquifer, Fe(III) concentrations ranged from 0 to 2 mg/L (IR86-MW56DW).

Increased levels of Fe(II) indicate that iron reduction is a degradation pathway in the surficial and upper Castle Hayne aquifers. Conditions in the middle Castle Hayne aquifer suggest that iron reduction in not a favorable degradation pathway.

Sulfate/Sulfide

After DO and nitrate have been depleted, sulfate may be used as the electron acceptor in anaerobic degradation. This process is termed "sulfate reduction" and results in the production of sulfide. However, sulfide preferentially precipitates with available dissolved metals (for example, ferrous iron) rather than remaining dissolved in groundwater. Sulfate concentrations less than background levels are indicative of anaerobic degradation by sulfate reduction. However, at concentrations greater than 20 mg/L, sulfate may compete with reductive dechlorination.

Concentrations of sulfate within the surficial aquifer ranged from 0.24BJ mg/L (IR86-MW62) to 5,700B mg/L (IR86-MW38IWA), with concentrations less than 20 mg/L in 11 of 25 monitoring wells. Concentrations of sulfide within the surficial aquifer ranged from non detect to 18 mg/L (IR86-MW38IWA), with concentrations greater than 1 mg/L in 5 of 25 monitoring wells.

Within the upper Castle Hayne aquifer, sulfate concentrations were less than 20 mg/L in 16 of 23 wells sampled, with concentrations ranging from 0.13BJ mg/L to 1400B mg/L. Sulfide concentrations were greater than 1 mg/L in 1 monitoring well (IR86-MW58IW).

Within the middle Castle Hayne aquifer, sulfate concentrations were less than 20 mg/L in 10 of 15 wells sampled, with concentrations ranging from 5.1B mg/L (IR86-MW15DW) to 63 mg/L (IR86-MW61DW). Sulfide concentrations were greater than 1 mg/L in 4 of 15 monitoring wells, with concentrations ranging from non detect to 13 mg/L (IR86-MW31DW).

The presence of sulfate at concentrations near or greater than 20 mg/L, combined with the absence of sulfide, suggests possible competitive exclusion of dechlorinating bacteria, as sulfate would act as the preferred electron acceptor over chlorinated solvents.

The sulfate and sulfide concentrations recorded during the ESRI monitoring well sampling events indicate that sulfate-reduction is not a major degradation pathway within the surficial aquifer, and that competitive exclusion of dechlorinating bacteria may be occurring. Within the upper Castle Hayne and middle Castle Hayne aquifers, conditions were generally favorable for sulfate reduction. Sulfide was detected in a very limited number of monitoring wells within the surficial, upper Castle Hayne, and middle Castle Hayne aquifers.

Methane

After the other electron acceptors have been utilized, carbon dioxide can be used as the electron acceptor in anaerobic degradation. In this process, termed "methanogenesis," carbon dioxide is reduced to produce methane. The presence of methane in the aquifer is indicative of strongly reducing conditions. In general, methane concentrations greater than background levels indicates that methanogenesis is occurring. Reductive dechlorination is most efficient under methanogenic conditions.

During the ESRI, methane levels ranged from less than 3.3J µg/L to 1,700 µg/L in the surficial aquifer, from 7.8JB µg/L to 1,200 µg/L in the upper Castle Hayne aquifer, and from non detect to 35 µg/L in the middle Castle Hayne aquifer. Concentrations of methane were greater than 0.5 mg/L in 6 of 25 monitoring wells in the surficial aquifer, 4 of 23 monitoring

wells in the upper Castle Hayne aquifer, and none of the monitoring wells in the middle Castle Hayne aquifer. The majority of monitoring wells in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers have measurable concentrations of methane which are, providing evidence that methanogenesis is occurring. .

Total Organic Carbon

Organic carbon is utilized as an electron donor (or may produce hydrogen, which can serve as the electron donor) in the reductive dechlorination process and therefore is needed to drive the process. Organic carbon can be naturally occurring or anthropogenic. The presence of TOC at concentrations greater than 20 mg/L indicates ideal conditions for reductive dechlorination to occur (USEPA, 1998; Wiedemeier et al., 1996).

Within the surficial aquifer, naturally occurring TOC concentrations were not detected above 11 mg/L. Within the upper Castle Hayne aquifer, naturally occurring TOC concentrations were not detected above 6.9 mg/L. Within the middle Castle Hayne aquifer, naturally occurring TOC concentrations were not detected above 9.5 mg/L. Based on these results, there does not appear to be sufficient substrate to support the dechlorination process in the surficial, upper Castle Hayne, or middle Castle Hayne aquifers. However, the presence of TCE daughter products in Site 86 groundwater indicates that the TOC present is adequate to drive reductive dechlorination to some extent.

Oxidation-Reduction Potential

The ORP of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. The ORP of a groundwater system depends upon and influences rates of biodegradation. Reductive dechlorination is most efficient in the ORP range corresponding to sulfate reduction and methanogenesis (less than -100 millivolts [mV]; however, dechlorination of PCE and other chlorinated ethenes also occurs in the ORP range associated with nitrate, manganese, and ferric iron reduction (-50 to 740 mV).

ORP measurements are, in general, negative across the site. Within the surficial aquifer, ORP measurements ranged from -204.2 mV to +186.8 mV, with 22 of 25 measurements less than +50 mV and 8 of 25 measurements less than -100 mV. Within the upper Castle Hayne aquifer, ORP measurements ranged from -356.1 mV to +162.2 mV, with 23 of 25 measurements less than +50 mV and 15 of 25 measurements less than -100 mV. Within the middle Castle Hayne aquifer, ORP measurements ranged from -306.6 mV to -97.1 mV, with 14 of 15 measurements less than -100 mV. In general, groundwater samples with ORP measurements greater than 50 mV were collected from monitoring wells located outside the extent of the plumes. These results suggest that conditions are favorable for reductive dechlorination in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers.

Chloride

Like the geochemical indicators discussed above, chloride concentrations greater than background levels indicate that reduction of chlorinated solvent-related contamination is occurring (USEPA, 1998; Wiedemeier et al., 1996). The average chloride concentrations detected in background wells were 14 mg/L in the surficial Aquifer, 16 mg/L in the upper Castle Hayne aquifer, and 24 mg/L in the middle Castle Hayne aquifer.

During the Site 86 ESRI monitoring well sampling event, chloride concentrations ranged from 4.5B mg/L to 38B mg/L in the surficial aquifer, with 11 of the 23 wells sampled exhibiting chloride concentrations greater than twice the mean Base background concentration. Within the upper Castle Hayne aquifer, chloride concentrations ranged from 9.4B mg/L to 32B mg/L, with 14 of the 27 wells sampled exhibiting chloride concentrations greater than background. Within the middle Castle Hayne aquifer, chloride concentrations ranged from 16B mg/L to 210B mg/L, with 5 of the 7 wells sampled exhibiting chloride concentrations greater than background. Within the surficial and upper Castle Hayne aquifers, the locations of elevated chloride concentration generally correspond to locations of elevated VOC concentration, suggesting that reductive dechlorination may be naturally occurring at the site.

Alkalinity

Elevated alkalinity (i.e., more than twice the mean Base background) is indicative of elevated levels of carbon dioxide generated by the biodegradation of fuel-related contamination and natural organic material (USEPA, 1998; Wiedemeier et al., 1996). The average background concentration of bicarbonate/carbonate alkalinity is 4 mg/L in both the surficial and Castle Hayne aquifers (CH2M HILL/Baker/CDM, 2003).

In the surficial aquifer, alkalinity concentrations ranged from 6J mg/L to 520 mg/L, showing a direct correlation to VOC concentration in some cases. In the upper Castle Hayne aquifer, alkalinity concentrations ranged from 140 mg/L to 460 mg/L. In the middle Castle Hayne aquifer, alkalinity concentrations ranged from 63 mg/L to 360 mg/L.

Summary

Analysis of the geochemical parameters generally indicates that conditions for natural attenuation are favorable or that natural attenuation is currently occurring in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers. Further, the data indicate that reductive dechlorination is the primary natural attenuation process in the higher-concentration areas of the groundwater plumes, while biodegradation via the aerobic pathway is likely the dominant fate process at the plume peripheries. Chlorinated solvents are capable of being depleted by natural processes in each aquifer. However, the limited native organic carbon present suggests that the natural attenuation process may be slowed and the high sulfate concentrations suggest that competitive exclusion of dechlorinating bacteria may be occurring. These conclusions are generally consistent with the Natural Attenuation Evaluation Report (CH2M HILL/Baker/CDM, 2003).

TABLE 5-1
Surface Water Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	NC2B-SW-Human Health & Water Supply[1]	Other Applicable Federal Criteria	Other Applicable Federal Criteria Reference	IR86-SW01	IR86-SW02		IR86-SW105		IR86-SW106	IR86-SW108	IR86-SW110	IR86-SW112	IR86-SW113
Sample ID				IR86-SW01-08B	IR86-SW02-08B	IR86-SW02-08B	IR86-SW105-09D	IR86-SW105D-09D	IR86-SW106-09D	IR86-SW108-09D	IR86-SW110-09D	IR86-SW112-09D	IR86-SW113-09D
Sample Date				06/11/08	06/11/08	06/11/08	11/08/09	11/08/09	11/08/09	11/08/09	11/08/09	11/08/09	11/08/09
Chemical Name													
Volatile Organic Compounds (µg/l)													
Chloromethane	--	2.6	IRIS & RAIS 2/07	0.5 U	0.5 U	0.5 U	1 U	1 U	0.2 J	0.18 J	0.3 J	0.2 J	0.24 J
cis-1,2-Dichloroethene	--	330	ECOTOX & RAIS 1/07	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.12 J	0.13 J
Tetrachloroethene	0.7	--	--	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.2 J	0.26 J
Toluene	--	11	NC2B - Freshwater Aquatic Life	0.5 U	0.5 U	0.5 U	0.57 J	0.56 J	1 U	1 U	1 U	1 U	1 U
Trichloroethene	2.5	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.19 J
Semivolatile Organic Compounds (µg/l)													
Benzo(a)anthracene	0.0028	--	--	0.11 U	0.12 U	0.1 UJ	0.14 J	0.14 J	0.2 U	0.14 J	0.15 J	0.2 U	0.21 U
Benzo(a)pyrene	0.0028	--	--	0.11 U	0.12 U	0.1 UJ	0.2 U	0.21 U	0.2 U	0.21 U	0.034 J	0.2 U	0.21 U
Benzo(b)fluoranthene	0.0028	--	--	0.11 U	0.12 U	0.1 UJ	0.046 J	0.21 U	0.2 U	0.21 U	0.083 J	0.2 U	0.21 U
Di-n-butylphthalate	--	9.5	ECOTOX & RAIS 1/07 - Freshwater Aquatic Life	0.11 U	0.12 U	0.1 UJ	0.18 J	0.21 J	0.36 J	5.2 U	5.1 U	5.1 U	5.2 U
Fluoranthene	--	0.11	ECOTOX & RAIS 2/07 - Freshwater Aquatic Life	0.11 U	0.12 U	0.1 UJ	0.043 J	0.035 J	0.03 J	0.025 J	0.092 J	0.2 U	0.21 U
Indeno(1,2,3-cd)pyrene	0.0028	--	--	0.11 U	0.12 U	0.1 UJ	0.2 U	0.21 U	0.068 J	0.21 U	0.2 U	0.2 U	0.21 U
Naphthalene	--	330	ECOTOX/IRIS/RAIS 2/07	0.11 U	0.12 U	0.1 UJ	0.15 J	0.19 J	0.2 U	0.21 U	0.2 U	0.2 U	0.21 U
Phenanthrene	--	--	--	0.11 U	0.12 U	0.1 UJ	0.029 J	0.21 U	0.2 U	0.21 U	0.037 J	0.2 U	0.21 U
Pyrene	--	830	NRWQC 06/ RAIS 2/07	0.11 U	0.12 U	0.1 UJ	0.043 J	0.034 J	0.024 J	0.023 J	0.079 J	0.2 U	0.21 U
Pesticide/Polychlorinated Biphenyls (µg/l)													
delta-BHC	--	--	--	0.056 U	0.051 U	0.056 U	0.025 U	0.026 U	0.026 U	0.014 J	0.026 U	0.026 U	0.026 U
Endosulfan II	--	0.05	NC2B - Freshwater Aquatic Life	0.11 U	0.1 U	0.11 U	0.04	0.039	0.057	0.026 U	0.026 U	0.026 U	0.026 U
Total Metals (µg/l)													
Aluminum	--	6,500	NRWQC 06/RAIS 1/09	200 U	200 U	200 U	240	91 J	200 U	88 J	3,800	200 U	120 J
Barium	1,000	--	--	9.2 J	8.5 J	8.2 J	26	25	21	23	67	9.3 J	8.8 J
Cadmium	--	2	NC2B - Freshwater Aquatic Life (Narrative Standard)	5 U	5 U	5 U	2 U	2 U	2 U	2 U	2.1	2 U	2 U
Calcium	--	--	--	25,500	22,300	21,800	75,000	70,000	73,000	66,000	56,000	33,000	32,000
Chromium	--	50	NC2B - Freshwater Aquatic Life	10 U	10 U	10 U	5 U	5 U	5 U	5 U	12	5 U	5 U
Copper	--	7	NC2B - Freshwater Aquatic Life (Action Level)	25 U	25 U	25 U	1.9 J	1.6 J	1.8 J	5 U	11	5 U	5 U
Iron	--	1,000	NC2B - Freshwater Aquatic Life (Action Level)	688	714	573	630	630	850	1,900	33,000	2,000	1,300
Lead	--	25	NC2B - Freshwater Aquatic Life (Narrative Standard)	10 U	2.7 J	10 U	10 U	10 U	10 U	3.2 J	10	10 U	10 U
Magnesium	--	--	--	5,000 U	5,000 U	5,000 U	3,000 J	2,800 J	2,600 J	3,800 J	2,500 J	2,000 J	4,600 J
Manganese	200	--	--	21.6 UJ	15 UJ	15 UJ	69	65	77	40	410	76	64
Potassium	--	--	--	871 J	830 J	799 J	3,400 J	2,800 J	3,200 J	2,500 J	2,700 J	5,000 U	1,900 J
Sodium	--	--	--	5,000 U	5,000 U	5,000 U	9,700	9,100	14,000	9,300	8,400	5,300	22,000
Vanadium	--	--	--	1.8 J	2.3 J	1.6 J	50 U	50 U	50 U	50 U	22 J	50 U	50 U
Zinc	--	50	NC2B - Freshwater Aquatic Life (Action Level)	60 U	60 U	60 U	6.1 J	20 U	6.7 J	11 J	84	20 U	20 U
Dissolved Metals (µg/l)													
Barium, Dissolved	1,000	--	--	NA	NA	NA	24 J	22 J	15 J	20 J	16 J	8 J	10 J
Calcium, Dissolved	--	--	--	NA	NA	NA	74,000 J	72,000 J	68,000 J	61,000 J	53,000 J	30,000 J	32,000 J
Iron, Dissolved	--	1,000	NC2B - Freshwater Aquatic Life (Action Level)	NA	NA	NA	82 J	100 U	100 U	100 U	100 U	42 J	100 U
Lead, Dissolved	--	25	NC2B - Freshwater Aquatic Life (Narrative Standard)	NA	NA	NA	10 U	10 U	3.3 J	10 U	10 U	10 U	10 U
Magnesium, Dissolved	--	--	--	NA	NA	NA	2,900 J	2,800 J	2,400 J	3,500 J	2,200 J	1,800 J	4,400 J
Manganese, Dissolved	200	--	--	NA	NA	NA	67	64	38	35	30	69	63
Potassium, Dissolved	--	--	--	NA	NA	NA	2,700 J	2,900 J	4,000 J	2,100 J	2,600 J	5,000 U	1,900 J
Sodium, Dissolved	--	--	--	NA	NA	NA	9,800	9,500	13,000	8,900	8,700	5,000 U	21,000
Zinc, Dissolved	--	50	NC2B - Freshwater Aquatic Life (Action Level)	NA	NA	NA	20 U	20 U	20 U	9 J	6 J	20 U	20 U

Notes:

Bold box indicates exceedance of NC2B-SW-Human Health + Water Supply

[1] - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria.
Shading indicates exceedance of other applicable federal criteria.

ECOTOX - US EPA ECOTOXicology Database
IRIS - EPA's Integrated Risk Information System
µg/l - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NC2B - North Carolina Administrative Code Title 15A, Subchapter 2B, Classifications and Water Quality Standards
NRWQC 06 - EPA's 2006 National Recommended Water Quality Criteria; 11/02 Human Health Calculation Matrix
RAIS - Risk Assessment Information System; Toxicity & Chemical Specific Factors database
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K. Howell/CLT
Checked By: T.Grim/CLT

TABLE 5-2
Sediment Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background SS 2X Mean	NC SSLs (January, 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-SD01	IR86-SD02		IR86-SD105		IR86-SD106		IR86-SD107		IR86-SD108		IR86-SD109		IR86-SD110	
Sample ID					IR86-SD01-08B	IR86-SD02-08B	IR86-SD02D-08B	IR86-SD105-0-0_5-09D	IR86-SD105-10A	IR86-SD106-0-0_5-09D	IR86-SD106-10A	IR86-SD107-0-0_5-09D	IR86-SD107D-0-0_5-09D	IR86-SD108-0-0_5-09D	IR86-SD108-10A	IR86-SD109-0-0_5-09D	IR86-SD109-10A	IR86-SD110-0-0_5-09D	IR86-SD110-10A
Sample Date					06/11/08	06/11/08	06/11/08	11/08/09	03/16/10	11/08/09	03/16/10	11/10/09	11/10/09	11/08/09	03/16/10	11/08/09	03/16/10	11/08/09	03/16/10
Chemical Name																			
Volatile Organic Compounds (µg/kg)																			
1,2-Dichlorobenzene	--	240	380,000	190,000	6.9 UJ	11 UJ	11 U	15 UJ	NA	5.9 J	NA	6.3 UJ	4.6 U	2.8 J	NA	15 UJ	NA	11 U	NA
1,3-Dichlorobenzene	--	7,600	--	--	6.9 UJ	11 UJ	11 U	15 UJ	NA	16 UJ	NA	6.3 UJ	4.6 U	2.7 J	NA	15 UJ	NA	11 U	NA
1,4-Dichlorobenzene	--	70	12,000	2,400	6.9 UJ	11 UJ	11 U	15 UJ	NA	16 UJ	NA	6.3 UJ	4.6 U	2.6 J	NA	15 UJ	NA	11 U	NA
Acetone	--	24,000	63,000,000	6,100,000	6.9 UJ	11 UJ	11 U	59 UJ	NA	65 UJ	NA	25 U	18 U	25 J	NA	60 U	NA	50 J	NA
Semivolatile Organic Compounds (µg/kg)																			
Acenaphthylene	--	11,000	3,300,000	340,000				62 U	NA	36 R	NA	3.8 U	3.4 U	230 J	NA	72 U	NA	55 J	NA
Anthracene	--	660,000	17,000,000	1,700,000	4.6 U	3.4 J	3.9 J	93	NA	23 J	NA	4.1	9.3	1,200	NA	99	NA	170	NA
Benzo(a)anthracene	--	180	2,100	150	4.6 U	15	15	580	NA	100 J	NA	36	56	**4,700**	NA	620	NA	530	NA
Benzo(a)pyrene	--	59	210	15	1.7 J	19	16	**1,000**	NA	**240 J**	NA	43	66	**6,200**	NA	**1,100**	NA	**1,100**	NA
Benzo(b)fluoranthene	--	600	2,100	150	2.8 J	34	38	**2,300**	NA	530 J	NA	68	110	**12,000**	NA	**2,300**	NA	**2,500**	NA
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	4.6 U	54	37	1,400	NA	320 J	NA	44	67	6,600	NA	1,300	NA	1,500	NA
Benzo(k)fluoranthene	--	5,900	21,000	1,500	2.4 J	31	22	570	NA	170 J	NA	23	38	4,000	NA	550	NA	670	NA
Butylbenzylphthalate	--	150,000	910,000	260,000	240 U	380 U	380 U	110 J	NA	2,700 U	NA	290 UJ	260 U	280 J	NA	2,700 U	NA	2,500 U	NA
Carbazole	--	--	--	--	240 U	380 U	380 U	170 J	NA	2,700 U	NA	290 UJ	260 U	980 J	NA	220 J	NA	240 J	NA
Chrysene	--	18,000	210,000	15,000	4.6 U	38	41	1,200	NA	300 J	NA	40	78	7,000	NA	1,300	NA	1,400	NA
Dibenz(a,h)anthracene	--	190	210	15	4.6 U	7.3 U	7.5	62 U	NA	36 R	NA	13	19	530 U	NA	72 U	NA	120 U	NA
Di-n-butylphthalate	--	19,000	6,200,000	610,000	240 U	380 U	380 U	930 U	NA	2,700 U	NA	290 UJ	30 J	230 J	NA	2,700 U	NA	2,500 U	NA
Fluoranthene	--	330,000	2,200,000	230,000	3 J	36	62	1,700	NA	370 J	NA	61	110	14,000	NA	1,900	NA	2,100	NA
Fluorene	--	56,000	2,200,000	230,000	240 U	380 U	380 U	62 U	NA	36 R	NA	3.8 U	1.5 J	530 U	NA	72 U	NA	120 U	NA
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	7.9 J	29	25	1,100	NA	240 J	NA	41	63	**5,700**	NA	1,100	NA	1,200	NA
Naphthalene	--	210	18,000	3,600	240 U	380 U	380 U	62 U	NA	36 R	NA	1.7 J	1.7 J	530 U	NA	72 U	NA	120 U	NA
Phenanthrene	--	57,000	17,000,000	1,700,000	4.6 U	10	13	370	NA	81 J	NA	11	27	3,600	NA	400	NA	440	NA
Pyrene	--	220,000	1,700,000	170,000	4.6 U	38	54	1,100	NA	250 J	NA	47	92	8,100	NA	1,400	NA	1,300	NA
Pesticide/Polychlorinated Biphenyls (µg/kg)																			
4,4'-DDD	--	240	7,200	2,000	1.6 J	16	15	NA	9.1 U	NA	12 U	3.7 U	0.4 J	NA	94 UJ	NA	66 U	NA	61 U
4,4'-DDE	--	--	5,100	1,400	1.3 J	47	45	NA	9.1 U	NA	12 U	0.72 J	0.62 J	NA	94 UJ	NA	66 U	NA	6.8 J
4,4'-DDT	--	340	7,000	1,700	4.6 U	30	8.5 J	NA	7.8 J	NA	9.8 J	2.1 J	2 J	NA	94 UJ	NA	66 UJ	NA	17 J
Endosulfan I	--	5,600	370,000	37,000	2.4 U	3.8 U	3.8 U	NA	4.6 J	NA	6 U	1.9 U	1.8 U	NA	48 UJ	NA	34 U	NA	31 U
Endrin aldehyde	--	810	18,000	1,800	4.6 U	7.3 U	7.3 U	NA	9.1 U	NA	2.4 J	3.7 U	3.6 U	NA	22 J	NA	66 U	NA	61 U
Endrin ketone	--	810	18,000	1,800	4.6 U	7.3 U	7.3 U	NA	4.6 J	NA	6.4 J	3.7 U	3.6 U	NA	67 J	NA	16 J	NA	61 U
gamma-Chlordane	--	68	6,500	1,600	0.86 J	8.6 J	8.5 J	NA	4.7 U	NA	6 U	0.7 J	1.8 U	NA	48 UJ	NA	34 U	NA	31 U
Heptachlor epoxide	--	0.82	190	53	2.4 U	1.6 J	2 J	NA	4.7 U	NA	6 U	1.9 U	1.8 U	NA	48 UJ	NA	34 U	NA	31 U
Total Metals (mg/kg)																			
Aluminum	5,487	--	99,000	7,700	1,570	3,700	5,320	12,000	NA	11,000	NA	9,400	9,500	14,000	NA	17,000	NA	16,000	NA
Antimony	0.447	--	41	3.1	0.86 J	10.3 UJ	1.3 J	0.63 J	NA	0.66 J	NA	0.29 J	0.57 U	5.9	NA	0.66 J	NA	0.61 J	NA
Arsenic	0.626	5.8	1.6	0.39	1.1 J	**1.7 J**	**2.7**	**2.6**	NA	**2.4**	NA	0.85	1.1	0.8 U	NA	**2.8**	NA	**2.9**	NA
Barium	14.5	580	19,000	1,500	4.7 J	12.5 J	18.2 J	57	NA	48	NA	20	20	52	NA	39	NA	40	NA
Beryllium	0.103	--	200	16	0.74 U	0.86 U	1.2 U	0.51	NA	0.19 J	NA	0.036 J	0.059 J	0.23 J	NA	0.2 J	NA	0.27 J	NA
Cadmium	0.033	3	80	7	0.74 U	0.73 J	1.1 J	3.9	NA	3.1	NA	0.56	0.73	7.1	NA	4.7	NA	8.2	NA
Calcium	6,360	--	--	--	736 U	56,100	56,200	13,000	NA	35,000	NA	1,400	1,500	2,400	NA	6,100	NA	5,700	NA
Chromium	6.05	3.8	5.6	0.29	3.2	9.7	13.8	**24**	NA	**20**	NA	**11**	**11**	**31**	NA	**27**	NA	**32**	NA
Cobalt	0.294	--	30	2.3	7.4 U	0.59 J	0.93 J	4.7	NA	3.6	NA	1 J	1 J	6.8	NA	4.3	NA	7.9	NA
Copper	4.83	700	4,100	310	0.83 J	9.6	14.1	25	NA	15	NA	3.3	3.6	26	NA	17	NA	35	NA
Iron	3,245	150	72,000	5,500	1,690	4,770	7,150	6,900	NA	6,900	NA	3,400	3,400	6,900	NA	9,900	NA	11,000	NA
Lead	12.3	270	800	400	2.6	32.7	50.6	29	NA	22	NA	14	14	66	NA	45	NA	51	NA
Magnesium	238	--	--	--	736 U	967 U	1,220 U	1,700	NA	2,600	NA	410	420	830	NA	970	NA	970	NA
Manganese	13.7	65	2,300	180	5.6	16.3	20.5	110	NA	97	NA	14	16	44	NA	61	NA	65	NA
Mercury	0.081	1	31	2.3	0.15 U	0.17 U	0.23 U	0.052 J	NA	0.035 J	NA	0.098 U	0.013 J	0.078 J	NA	0.058 J	NA	0.11 J	NA
Nickel	1.21	130	2,000	160	5.9 U	6.9 U	9.7 U	15	NA	11	NA	2.6	3.1	16	NA	12	NA	19	NA
Potassium	116	--	--	--	70.5 J	224 J	292 J	620 J	NA	700 J	NA	390	440	610 J	NA	950 J	NA	870 J	NA
Selenium	0.563	2.1	510	39	5.2 U	6 U	8.5 U	0.98 J	NA	1 U	NA	0.6 U	0.57 U	28	NA	1.2 U	NA	1.2	NA
Silver	0.14	3.4	510	39	1.5 U	1.7 U	2.4 U	0.4 J	NA	0.24 J	NA	0.052 J	0.057 J	1.1	NA	0.31 J	NA	0.59	NA
Thallium	0.36	--	6.6	0.51	3.7 U	4.3 U	6.1 U	5.1 U	NA	5.2 U	NA	3 U	2.8 U	3.4 J	NA	5.8 U	NA	5 U	NA
Vanadium	8.9	--	520	39	5.7 J	17.5	24.3	26	NA	22	NA	15	16	30	NA	35	NA	37	NA
Zinc	10.8	1,200	31,000	2,300	9.9	87.7	129	160	NA	100	NA	12	16	160	NA	110	NA	190	NA
Wet Chemistry																			
% Solids (pct)	--	--	--	--	NA	NA	NA	46.8	35.6	45.2	28.1	81.2	85	61.5	34.6	43.3	50	49.3	53.3
Total organic carbon (TOC) (mg/kg)	--	--	--	--	NA	NA	NA	61,000	NA	90,000	NA	NA	NA	38,000	NA	NA	NA	43,000	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for surface soil
Bold box indicates exceedance of NCSSLs
Bold text indicates exceedance of Adjusted Industrial Soil RSLs
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
pct - Percent
R - Unreliable result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 5-2
Sediment Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background SS 2X Mean	NC SSLs (January, 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-SD112			IR86-SD113	
Sample ID					IR86-SD112-0-0_5-09D	IR86-SD112-10A	IR86-SD112D-10A	IR86-SD113-0-0_5-09D	IR86-SD113-10A
Sample Date					11/08/09	03/16/10	03/16/10	11/08/09	03/16/10
Chemical Name									
Volatile Organic Compounds (µg/kg)									
1,2-Dichlorobenzene	--	240	380,000	190,000	15 UJ	NA	NA	9.4 U	NA
1,3-Dichlorobenzene	--	7,600	--	--	15 UJ	NA	NA	9.4 U	NA
1,4-Dichlorobenzene	--	70	12,000	2,400	15 UJ	NA	NA	9.4 U	NA
Acetone	--	24,000	63,000,000	6,100,000	61 U	NA	NA	38 U	NA
Semivolatile Organic Compounds (µg/kg)									
Acenaphthylene	--	11,000	3,300,000	340,000	9.2 U	NA	NA	24 U	NA
Anthracene	--	660,000	17,000,000	1,700,000	66	NA	NA	20 J	NA
Benzo(a)anthracene	--	180	2,100	150	240	NA	NA	140	NA
Benzo(a)pyrene	--	59	210	15	360	NA	NA	160	NA
Benzo(b)fluoranthene	--	600	2,100	150	730	NA	NA	270	NA
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	510	NA	NA	180	NA
Benzo(k)fluoranthene	--	5,900	21,000	1,500	290	NA	NA	93	NA
Butylbenzylphthalate	--	150,000	910,000	260,000	1,400 U	NA	NA	740 UJ	NA
Carbazole	--	--	--	--	1,400 U	NA	NA	740 UJ	NA
Chrysene	--	18,000	210,000	15,000	520	NA	NA	160	NA
Dibenz(a,h)anthracene	--	190	210	15	100	NA	NA	59	NA
Di-n-butylphthalate	--	19,000	6,200,000	610,000	1,400 U	NA	NA	740 UJ	NA
Fluoranthene	--	330,000	2,200,000	230,000	670	NA	NA	220	NA
Fluorene	--	56,000	2,200,000	230,000	10	NA	NA	24 U	NA
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	460	NA	NA	160	NA
Naphthalene	--	210	18,000	3,600	6.8 J	NA	NA	24 U	NA
Phenanthrene	--	57,000	17,000,000	1,700,000	170	NA	NA	49	NA
Pyrene	--	220,000	1,700,000	170,000	730	NA	NA	180	NA
Pesticide/Polychlorinated Biphenyls (µg/kg)									
4,4'-DDD	--	240	7,200	2,000	NA	11 U	120 U	NA	7 U
4,4'-DDE	--	--	5,100	1,400	NA	11 U	120 U	NA	7 U
4,4'-DDT	--	340	7,000	1,700	NA	11 UJ	120 UJ	NA	7 UJ
Endosulfan I	--	5,600	370,000	37,000	NA	5.5 U	60 U	NA	3.6 U
Endrin aldehyde	--	810	18,000	1,800	NA	1.2 J	120 U	NA	7 U
Endrin ketone	--	810	18,000	1,800	NA	11 UJ	120 U	NA	7 UJ
gamma-Chlordane	--	68	6,500	1,600	NA	5.5 U	60 U	NA	3.6 U
Heptachlor epoxide	--	0.82	190	53	NA	5.5 U	60 U	NA	3.4 J
Total Metals (mg/kg)									
Aluminum	5,487	--	99,000	7,700	16,000	NA	NA	3,200	NA
Antimony	0.447	--	41	3.1	1.4	NA	NA	0.44 J	NA
Arsenic	0.626	5.8	1.6	0.39	**9.7**	NA	NA	**3.9**	NA
Barium	14.5	580	19,000	1,500	78	NA	NA	20	NA
Beryllium	0.103	--	200	16	1.2	NA	NA	0.2 J	NA
Cadmium	0.033	3	80	7	3.8	NA	NA	0.69	NA
Calcium	6,360	--	--	--	5,800	NA	NA	1,800	NA
Chromium	6.05	3.8	5.6	0.29	**36**	NA	NA	**5.7**	NA
Cobalt	0.294	--	30	2.3	5.4	NA	NA	2	NA
Copper	4.83	700	4,100	310	16	NA	NA	1.9	NA
Iron	3,245	150	72,000	5,500	30,000	NA	NA	14,000	NA
Lead	12.3	270	800	400	19	NA	NA	4.1	NA
Magnesium	238	--	--	--	1,100	NA	NA	300 J	NA
Manganese	13.7	65	2,300	180	66	NA	NA	55	NA
Mercury	0.081	1	31	2.3	0.081 J	NA	NA	0.013 J	NA
Nickel	1.21	130	2,000	160	14	NA	NA	2.2 J	NA
Potassium	116	--	--	--	990 J	NA	NA	220 J	NA
Selenium	0.563	2.1	510	39	2	NA	NA	0.76 U	NA
Silver	0.14	3.4	510	39	1.5	NA	NA	0.23 J	NA
Thallium	0.36	--	6.6	0.51	1.2 J	NA	NA	0.69 J	NA
Vanadium	8.9	--	520	39	52	NA	NA	8.2	NA
Zinc	10.8	1,200	31,000	2,300	130	NA	NA	19	NA
Wet Chemistry									
% Solids (pct)	--	--	--	--	34.7	31.1	28	64.8	47.1
Total organic carbon (TOC) (mg/kg)	--	--	--	--	40,000	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for surface soil
Bold box indicates exceedance of NCSSLs
Bold text indicates exceedance of Adjusted Industrial Soil RSLs
Underline indicates exceedance of Adjusted Residential Soil RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
pct - Percent
R - Unreliable result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 5-3
Surface Soil Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background SS 2X Mean	NC SSLs (Jan. 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-SS01	IR86-SS02	IR86-SS03	IR86-SS04	IR86-SS05		IR86-SS06	IR86-SS07	IR86-SS08	IR86-SS09	IR86-SS10	IR86-IS100	IR86-IS101	IR86-IS102	IR86-IS103		IR86-IS104
Sample ID					IR86-SS01-07D	IR86-SS02-07D	IR86-SS03-07D	IR86-SS04-07D	IR86-SS05-07D	IR86-SS05D-07D	IR86-SS06-07D	IR86-SS07-07D	IR86-SS08-07D	IR86-SS09-07D	IR86-SS10-07D	IR86-SS100-09D	IR86-SS101-0-0.5-09D	IR86-SS102-0-0.5-09D	IR86-SS103-0-0.5-09D	IR86-SS103D-0-0.5-09D	IR86-SS104-0-0.5-09D
Sample Date					12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	12/07/07	10/07/09	10/09/09	10/09/09	10/09/09	10/09/09	10/09/09
Chemical Name																					
Volatile Organic Compounds (µg/kg)																					
2-Butanone	--	16,000	20,000,000	2,800,000	14 U	14 U	12 U	19 U	13 U	12 U	13 UJ	21 UJ	15 U	13 UJ	14 UJ	12 UJ	11 UJ	9.7 U	10 U	9.6 UJ	18 UJ
Acetone	--	24,000	63,000,000	6,100,000	14 U	14 U	12 U	19 U	13 U	12 U	13 UJ	24 UJ	20 U	13 UJ	14 UJ	4.9 J	22 UJ	19 U	21 U	19 UJ	37 UJ
Ethylbenzene	--	8,100	27,000	5,400	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	1.1 J	5.1 U	4.8 UJ	9.2 UJ
Isopropylbenzene	--	1,300	270,000	210,000	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	2.5 J	5.1 U	4.8 UJ	9.2 UJ
Methylcyclohexane	--	--	--	--	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	4.9 U	5.1 U	4.8 UJ	9.2 UJ
Methylene chloride	--	23	53,000	11,000	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	4.9 U	5.1 U	4.8 UJ	9.2 UJ
Toluene	--	5,500	820,000	500,000	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	4.9 U	5.1 U	4.8 UJ	9.2 UJ
Xylene, total	--	6,000	260,000	63,000	14 U	14 U	12 U	19 U	13 U	12 U	13 U	21 U	15 U	13 U	14 U	5.8 UJ	5.5 UJ	9	5.1 U	4.8 UJ	9.2 UJ
Semivolatile Organic Compounds (µg/kg)																					
Acenaphthene	--	8,400	3,300,000	340,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	4.4 U	3.7 U	3.5 U	3.6 U	79
Acenaphthylene	--	11,000	3,300,000	340,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	4.4 U	3.7 U	3.5 U	3.6 U	2.2 J
Acetophenone	--	--	2,500,000	780,000	360 U	87 J	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	280 R	330 U	280 R	270 UJ	270 UJ	290 R
Anthracene	--	660,000	17,000,000	1,700,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	2.5 J	3.8	3.5 U	3.6 U	140
Benzaldehyde	--	--	1,200,000	780,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	280 UJ	330 U	280 UJ	270 UJ	270 UJ	290 UJ
Benzo(a)anthracene	--	180	2,100	150	360 U	380 U	370 U	370 U	360 U	360 U	170 J	250 J	370 U	390 U	360 U	3.7 U	42	45 J	11	3.9	260
Benzo(a)pyrene	--	59	210	15	360 U	380 U	370 U	370 U	360 U	360 U	140 J	140 J	370 U	390 U	360 U	3.7 U	57	58 J	16 J	4.8 J	**220**
Benzo(b)fluoranthene	--	600	2,100	150	360 U	380 U	370 U	96 J	360 U	360 U	220 J	170 J	370 U	390 U	360 U	3.7 U	89	87 J	21 J	6.3 J	290
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	50	60 J	20 J	5.1 J	190
Benzo(k)fluoranthene	--	5,900	21,000	1,500	360 U	380 U	370 U	370 U	360 U	360 U	190 J	190 J	370 U	390 U	360 U	3.7 U	32	34 J	8.2 J	2.5 J	140
bis(2-Ethylhexyl)phthalate	--	7,200	120,000	35,000	360 U	380 U	370 U	290 J	360 U	100 J	210 J	83 J	370 U	390 U	360 U	280 U	330 U	280 U	270 UJ	270 UJ	290 U
Butylbenzylphthalate	--	150,000	910,000	260,000	360 U	380 U	370 U	240 J	360 U	360 U	240 J	400 U	370 U	390 U	360 U	280 U	330 U	280 U	270 UJ	270 UJ	99 J
Carbazole	--	--	--	--	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 UJ	280 U	330 U	280 U	270 UJ	270 UJ	29 J
Chrysene	--	18,000	210,000	15,000	360 U	380 U	370 U	370 U	360 U	360 U	250 J	260 J	370 U	390 U	360 U	3.7 U	61	57 J	12	4.3	250
Dibenz(a,h)anthracene	--	190	210	15	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	4.4 U	3.7 U	3.5 U	3.6 U	3.9 U
Di-n-butylphthalate	--	19,000	6,200,000	610,000	360 U	380 U	370 U	80 J	360 U	360 U	240 J	400 U	370 U	390 U	360 U	280 U	330 U	280 U	270 UJ	270 UJ	290 U
Di-n-octylphthalate	--	38,000	120,000	35,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	280 U	330 U	47 J	270 UJ	270 UJ	290 U
Fluoranthene	--	330,000	2,200,000	230,000	360 U	380 U	370 U	370 U	360 U	360 U	350 J	460	370 U	87 J	360 U	3.7 U	91	69	15	5.3	540
Fluorene	--	56,000	2,200,000	230,000	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	4.4 U	3.7 U	3.5 U	3.6 U	60
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	360 U	380 U	370 U	370 U	360 U	360 U	120 J	97 J	370 U	390 U	360 U	3.7 U	45	47 J	13 J	3.9 J	170
Naphthalene	--	210	18,000	3,600	360 U	380 U	370 U	370 U	360 U	360 U	360 U	400 U	370 U	390 U	360 U	3.7 U	4.4 U	3.7 U	3.5 U	3.6 U	12
Phenanthrene	--	57,000	17,000,000	1,700,000	360 U	380 U	370 U	370 U	360 U	360 U	81 J	310 J	370 U	390 U	360 U	3.7 U	13	11	3.5 U	3.6 U	360
Pyrene	--	220,000	1,700,000	170,000	360 U	380 U	370 U	370 U	360 U	360 U	290 J	340 J	370 U	390 U	360 U	1.7 J	68	71 J	13	5	430
Pesticide/Polychlorinated Biphenyls (µg/kg)																					
4,4'-DDD	--	240	7,200	2,000	0.94 J	3.8 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	3.7 U	0.95 J	3.6 UJ	3.6 U	4.4 U	1.7 J	0.73 J	0.55 J	1.3 J
4,4'-DDE	--	--	5,100	1,400	4.1	2 J	4.6	2.2 J	2.9 J	3.6	18 J	3.4 J	3.7 U	1.9 J	3.6 UJ	3.6 U	4.4 U	19	0.66 J	1.2 J	2.1 J
4,4'-DDT	--	340	7,000	1,700	2.7 J	3.8 U	1.2 J	3.7 U	3.6 U	3.6 U	9	2.5 J	3.7 U	1.6 J	3.6 UJ	3.6 U	4.4 U	3.5 J	3.5 U	3.5 U	6.9 J
alpha-Chlordane	--	68	6,500	1,600	1.6 J	1.9 U	2.6 J	1.9 U	1.8 U	1.8 U	1.9 U	1.7 J	1.9 U	1.3 J	1.9 UJ	1.9 U	2.2 U	1.9 U	1.8 U	1.8 U	4.6
beta-BHC	--	1.2	960	270	1.9 U	1.9 U	0.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 UJ	1.9 U	2.2 U	1.9 U	1.8 U	1.8 U	2 U
Dieldrin	--	0.81	110	30	0.99 J	0.96 J	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	3.7 U	0.8 J	3.6 UJ	3.6 U	4.4 U	0.88 J	1.3 J	1.7 J	5.7 J
Endosulfan I	--	5,600	370,000	37,000	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 UJ	1.9 U	2.2 U	1.9 U	1.8 U	1.8 U	2 U
Endosulfan II	--	5,600	370,000	37,000	5	0.84 J	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	3.7 U	3.9 U	3.6 UJ	3.6 U	4.4 U	2.7 J	3.5 U	3.5 U	2.4 J
Endosulfan sulfate	--	5,600	370,000	37,000	3.6 U	3.8 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	3.7 U	3.9 U	3.6 UJ	3.6 U	4.4 U	3.7 U	3.5 U	3.5 U	3.8 U
Endrin ketone	--	810	18,000	1,800	3.6 U	3.8 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	4 U	3.7 U	3.9 U	3.6 UJ	3.6 U	4.4 U	3.7 U	3.5 U	3.5 U	3.8 U
gamma-Chlordane	--	68	6,500	1,600	1.6 J	0.51 J	1.8 J	0.45 J	1.8 U	1.8 U	3.6 U	1.5 J	3.7 U	1.1 J	3.6 UJ	1.9 U	2.2 U	1.9 U	1 J	0.65 J	5.9
Heptachlor epoxide	--	0.82	190	53	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 UJ	1.9 U	2.2 U	1.9 U	1.8 U	1.8 U	2 U
Methoxychlor	--	22,000	310,000	31,000	19 U	19 U	19 U	19 U	1.8 U	1.8 U	19 U	20 U	1.9 U	2 U	19 UJ	19 U	22 U	19 U	18 U	18 U	20 U
Total Metals (mg/kg)																					
Aluminum	5,487	--	99,000	7,700	4,360	4,050	5,070	2,480	2,030	1,580	3,800	4,970	1,130	3,820	3,990	3,600	10,000	5,200	3,400	5,100	6,800
Antimony	0.447	--	41	3.1	6.6 U	6.8 U	6.7 U	6.7 U	6.5 U	6.5 U	6.6 U	7.3 U	6.8 U	7.2 U	6.6 U	0.56 UJ	0.67 UJ	0.57 UJ	0.54 UJ	0.54 UJ	0.26 J
Arsenic	0.626	5.8	1.6	0.39	1.6	0.98 J	1.5	0.67 J	1.1 U	1 U	**2.3**	0.88 J	1.1 U	1.1 J	0.63 J	**3.2**	1.4	**2.1**	1.5	**1.8**	**1.7**
Barium	14.5	580	19,000	1,500	9.4 J	12.1 J	10.8 J	18.6 J	12.3 J	10.3 J	17.9 J	27.1	14.1 J	16.1 J	11.3 J	22	23	38	28	23	17
Beryllium	0.103	--	200	16	0.55 U	0.56 U	0.56 U	0.55 U	0.54 U	0.52 U	0.54 U	0.6 U	0.56 U	0.6 U	0.53 U	0.19 J	0.14 J	0.16 J	0.19 J	0.17 J	0.081 J
Cadmium	0.033	3	80	7	0.55 U	0.048 J	0.081 J	1.6	0.064 J	0.52 U	0.47 J	0.087 J	0.56 U	0.59 J	0.063 J	0.6	0.46	0.6	0.51	0.41	0.93
Calcium	6,360	--	--	--	17,100	1,780	32,000	14,700	2,110	1,200	35,500	3,280	683	28,300	4,870	12,000	6,000	70,000	15,000	22,000	20,000
Chromium	6.05	3.8	5.6	0.29	**6.4**	**5.8**	**6.8**	**13.3**	3.5	2.7	**12.6**	**10.9**	1.4	**6.6**	4.2	**23**	**12**	**12**	**19**	**16**	**10**
Cobalt	0.294	--	30	2.3	5.5 U	5.6 U	5.6 U	5.5 U	5.4 U	5.2 U	5.4 U	6 U	5.6 U	6 U	5.3 U	2.5	0.78 J	1.8	0.95 J	1.3 J	1 J
Copper	4.83	700	4,100	310	2.4 J	2.4 J	2.2 J	5.8 J	1.6 J	1.1 J	7.2 J	7.3 J	1.3 J	8.3 J	2.1 J	1	3	6	1.2	1.9	4.8
Iron	3,245	150	72,000	5,500	4,120 J	2,900 J	4,020 J	2,310 J	1,520 J	1,490 J	3,840 J	1,760 J	499 J	2,660 J	2,550 J	2,700 J	4,000 J	3,300 J	2,100 J	2,700 J	3,700 J
Lead	12.3	270	800	400	11.5 J	11.1 J	12.2 J	42.1 J	5.9 J	3.8 J	61.3 J	99.9 J	3.7 J	18.8 J	9 J	0.19 J	12	3.7	0.74 J	2.7 J	27
Magnesium	238	--	--	--	370 J	145 J	617	471 J	97.6 J	72.1 J	1,280	352 J	67.4 J	450 J	177 J	410	590	1,900	520	700	620
Manganese	13.7	65	2,300	180	9.4 J	7.9 J	15.6 J	21.8 J	7.7 J	6.2 J	18.6 J	29.3 J	1.5 J	23.6 J	8.1 J	14	16	79	17	20	26
Mercury	0.081	1	31	2.3	0.047 J	0.11 UJ	0.11 UJ	0.048 J	0.1 UJ	0.1 UJ	0.06 J	0.076 J	0.11 UJ	0.12 UJ	0.1 UJ	0.092 U	0.11 U	0.094 U	0.09 U	0.09 U	0.098 U
Nickel	1.21	130	2,000	150	1.7 J	1.8 J	1.7 J	2.8 J	0.71 J	0.54 J	3 J	4.6 J	0.75 J	2.2 J	0.83 J	7.3 J	3.3	5.5	3.3	4.3	3.1
Potassium	116	--	--	--	171 J	96 J	227 J	98.8 J	68 J	46.9 J	328 J	150 J	35.4 J	94.4 J	126 J	480	370 J	1,500 J	410 J	460 J	240 J
Selenium	0.563	2.1	510	39	0.28 J	0.3 J	3.9 U	3.9 U	3.8 U	3.7 U	3.8 U	4.2 U	3.9 U	4.2 U	3.7 U	1.1	0.34 J	0.39 J	0.26 J	0.34 J	0.48 J
Silver	0.14	3.4	510	39	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1 U	1.1 U	1.2 U	1.1 U	1.2 U	1.1 U	0.28 U	0.34 U	0.28 U	0.27 U	0.27 U	0.29 U
Sodium	80.9	--	--	--	552 U	568 U	556 U	559 U	545 U	542 U	549 U	604 U	564 U	597 U	550 U	180 J	32 J	380	130 J	130 J	64 J
Thallium	0.36	--	6.6	0.51	2.8 U	2.8 U	0.35 J	0.41 J	2.7 U	2.6 U	0.4 J	0.4 J	2.8 U	3 U	2.7 U	0.53 J	3.4 U	2.8 U	2.7 U	2.7 U	2.9 U
Vanadium	8.9	--	520	39	13.6	11.1	12.1	8.5	4.7 J	3.7 J	16.6	22.5	4.9 J	8.5	7.4	15	18	10	11	12	13
Zinc	10.8	1,200	31,000	2,400	11.3	12	17.6	68.1	10.7	6 J	32.4	28.9	5.3 J	35.2	5.4 J	18	15	21	17	16	39
Wet Chemistry (mg/kg)																					
Cyanide	--	0.28	2,000	160	0.19 J	0.2 J	2.8 U	0.4 J	2.7 U	2.7 U	0.22 J	0.33 J	0.21 J	0.39 J	0.5 J	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for surface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
R - Unreliable result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Howell/CLT
Checked By: D.Brown/CLT

TABLE 5-3
Surface Soil Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background SS 2X Mean	NC SSLs (Jan. 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-IS105	IR86-IS106	IR86-IS107	IR86-IS108	IR86-IS109	IR86-IS110	IR86-IS111	IR86-IS112	IR86-IS113	IR86-IS114	
Sample ID					IR86-SS105-0-0.5-09D	IR86-SS106-0-0.5-09D	IR86-SS107-0-0.5-09D	IR86-SS108-0-0.5-09D	IR86-SS109-09D	IR86-SS110-0-0.5-09D	IR86-SS111-0-0.5-09D	IR86-SS112-0-0.5-09D	IR86-SS113-0-0.5-09D	IR86-SS114-0-0.5-09D	IR86-SS114D-0-0.5-09D
Sample Date					10/10/09	10/10/09	10/10/09	10/11/09	10/08/09	10/11/09	10/11/09	10/12/09	10/12/09	10/13/09	10/13/09
Chemical Name															
Volatile Organic Compounds (µg/kg)															
2-Butanone	--	16,000	20,000,000	2,800,000	11 UJ	13 UJ	16 U	16 UJ	13 U	18 UJ	20 J	9.9 UJ	15 J	13 U	11 UJ
Acetone	--	24,000	63,000,000	6,100,000	22 UJ	26 UJ	31 U	32 UJ	25 U	130 J	140 J	6.7 J	230 J	9.5 J	23 UJ
Ethylbenzene	--	8,100	27,000	5,400	5.5 UJ	6.6 UJ	7.8 U	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	6.6 U	5.7 UJ
Isopropylbenzene	--	1,300	270,000	210,000	5.5 UJ	6.6 UJ	7.8 U	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	6.6 U	5.7 UJ
Methylcyclohexane	--	--	--	--	5.5 UJ	6.6 UJ	7.4 J	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	6.6 U	5.7 UJ
Methylene chloride	--	23	53,000	11,000	9.9 UJ	6.6 UJ	7.8 U	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	12	5.7 UJ
Toluene	--	5,500	820,000	500,000	4.2 J	6.6 UJ	53	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	6.6 U	5.7 UJ
Xylene, total	--	6,000	260,000	63,000	5.5 UJ	6.6 UJ	7.8 U	8.1 UJ	6.3 U	9.1 UJ	7.7 UJ	4.9 UJ	7.6 UJ	6.6 U	5.7 UJ
Semivolatile Organic Compounds (µg/kg)															
Acenaphthene	--	8,400	3,300,000	340,000	4.1 U	4.1 U	3.6 U	4.2 U	3.7 U	4.2 U	3.8 U	3.9 U	4.8 U	4.6 U	4.5 U
Acenaphthylene	--	11,000	3,300,000	340,000	4.1 U	4.1 U	3.6 U	4.2 U	3.7 U	4.2 U	3.8 U	3.9 U	4.8 U	4.6 U	4.5 U
Acetophenone	--	--	2,500,000	780,000	310 UJ	310 R	270 U	320 U	280 UJ	320 UJ	290 U	290 U	370 U	350 U	340 U
Anthracene	--	660,000	17,000,000	1,700,000	0.92 J	5.3	3.6 U	2.7 J	0.95 J	1 J	3.8 U	3.9 U	4.8 U	4.3 J	44 J
Benzaldehyde	--	--	1,200,000	780,000	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	30 J	350 U	340 U
Benzo(a)anthracene	--	180	2,100	150	8.7	38	5.7 J	30	10	7.6	1.8 J	3.6 J	9.4 J	47 J	240 J
Benzo(a)pyrene	--	59	210	15	12	49	5.7 J	41	10	11	3.5 J	3.6 J	9.1 J	47 J	**290 J**
Benzo(b)fluoranthene	--	600	2,100	150	17	73	8.1 J	67	17	19	5.7	4.6 J	14 J	84 J	360 J
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	11		5.3 J	39	9.2	11	4	3.9 U	1.4 J	46 J	230 J
Benzo(k)fluoranthene	--	5,900	21,000	1,500	7.6	24	2.6 J	23	6.6	6.6	2.3 J	4	7.9	39 J	280 J
bis(2-Ethylhexyl)phthalate	--	7,200	120,000	35,000	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	370 U	41 J	140 J
Butylbenzylphthalate	--	150,000	910,000	260,000	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	370 U	350 U	60 J
Carbazole	--	--	--	--	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	370 U	350 U	46 J
Chrysene	--	18,000	210,000	15,000	11	48	6 J	45	16	13	3.3 J	3.9 UJ	3.6 J	62 J	290 J
Dibenz(a,h)anthracene	--	190	210	15	4.1 U	4.1 U	3.6 U	8.3	3.7 U	4.2 U	3.8 U	3.9 UJ	4.8 UJ	4.6 U	4.5 U
Di-n-butylphthalate	--	19,000	6,200,000	610,000	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	30 J	350 U	340 U
Di-n-octylphthalate	--	38,000	120,000	35,000	310 UJ	310 U	270 U	320 U	280 UJ	320 UJ	290 U	290 U	370 U	350 U	340 U
Fluoranthene	--	330,000	2,200,000	230,000	15	73	9.7 J	65	31	19	4.5	7.8 J	17 J	99 J	430 J
Fluorene	--	56,000	2,200,000	230,000	4.1 U	4.1 U	3.6 U	4.2 U	3.7 U	4.2 U	3.8 U	3.9 U	4.8 U	4.6 U	4.5 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	8.7	37	4.4 J	33	7.7	9	3.3 J	3.9 UJ	2 J	46 J	220 J
Naphthalene	--	210	18,000	3,600	4.1 U	4.1 U	3.6 UJ	4.2 U	3.7 U	4.2 U	3.8 U	3.9 U	4.8 U	4.6 U	1.7 J
Phenanthrene	--	57,000	17,000,000	1,700,000	4.9	19	4.3 J	14	4.3	5.6	3.8 U	2.7 J	4.9	23 J	110 J
Pyrene	--	220,000	1,700,000	170,000	14	58	8.8 J	55	25	16	3.8	6	14	81 J	370 J
Pesticide/Polychlorinated Biphenyls (µg/kg)															
4,4'-DDD	--	240	7,200	2,000	14 J	4.2 J	3.6 U	0.71 J	6.4	4.2 U	3.8 UJ	3.9 U	3.9 J	4.6 U	1.3 J
4,4'-DDE	--	--	5,100	1,400	3.9 J	0.89 J	3.2 J	1.2 J	5.2	0.99 J	0.41 J	3.9 U	16	4.6 U	1.7 J
4,4'-DDT	--	340	7,000	1,700	5.1 J	2.1 J	3.6 UJ	4.3 U	1.5 J	5.8 J	3.8 UJ	3.9 U	15	4.6 U	4.5 U
alpha-Chlordane	--	68	6,500	1,600	30	0.74 J	1.9 U	2.2 U	1.9 U	9.3 J	2 UJ	2 U	2.5 U	2.3 U	2.3 U
beta-BHC	--	1.2	960	270	28	2.1 U	1.9 U	2.2 U	1.9 U	2.2 U	2 UJ	2 U	2.5 U	2.3 U	2.3 U
Dieldrin	--	0.81	110	30	4.1 U	4.1 U	3.6 U	4.3 U	0.57 J	4.2 U	3.8 UJ	3.9 U	4.8 U	4.6 U	4.5 U
Endosulfan I	--	5,600	370,000	37,000	34 J	2.1 U	1.9 U	2.2 U	1.9 U	2.2 U	2 UJ	2 U	2.5 U	2.3 U	2.3 U
Endosulfan II	--	5,600	370,000	37,000	4.8 J	3.4 J	3.6 U	4.3 U	3.7 U	8.8 J	3.8 UJ	3.9 U	4.8 U	4.6 U	2.7 J
Endosulfan sulfate	--	5,600	370,000	37,000	2.7 J	4.1 U	3.6 U	4.3 U	3.7 U	4.2 U	3.8 UJ	3.9 U	4.8 U	4.6 U	4.5 U
Endrin ketone	--	810	18,000	1,800	4.1 U	4.1 U	3.6 U	4.3 U	3.7 U	4.2 U	3.8 UJ	3.9 U	4.8 U	4.6 U	3.5 J
gamma-Chlordane	--	68	6,500	1,600	30 J	1.1 J	1.8 J	2.2 U	7 J	2.2 U	2 UJ	2 U	4.3 J	2.3 U	1.1 J
Heptachlor epoxide	--	0.82	190	53	2.4	2.1 U	1.9 U	2.2 U	1.9 U	2.2 U	2 UJ	2 U	8.4	2.3 U	2.3 U
Methoxychlor	--	22,000	310,000	31,000	21 U	9.5 J	19 UJ	22 U	19 U	51 J	20 UJ	20 U	25 U	23 U	2.9 J
Total Metals (mg/kg)															
Aluminum	5,487	--	99,000	7,700	8,300 J	10,000 J	3,500 J	8,700 J	3,100	7,800 J	14,000 J	15,000	3,100	8,000	7,400
Antimony	0.447	--	41	3.1	0.23 J	0.3 J	0.55 UJ	0.65 UJ	0.56 UJ	0.65 UJ	0.58 UJ	0.6 UJ	0.74 UJ	0.71 U	0.68 U
Arsenic	0.626	5.8	1.6	0.39	0.98	1.2	**2.2**	0.64 J	**2.3**	0.33 J	0.65	0.61	0.74 U	0.5 J	0.68 U
Barium	14.5	580	19,000	1,500	21	19	24	19	14	23	18	20	28	32	91
Beryllium	0.103	--	200	16	0.25 U	0.25 U	0.14 J	0.036 J	0.15 J	0.26 U	0.23 U	0.24 U	0.29 U	0.28 U	0.27 U
Cadmium	0.033	3	80	7	0.18	0.19	0.48	0.4	0.58	0.13	0.3	0.063 J	0.11 J	0.67	1.8
Calcium	6,360	--	--	--	3,400	26,000	26,000	3,400	37,000	650	940	160 J	260 J	2,100	2,600
Chromium	6.05	3.8	5.6	0.29	**11**	**11**	**20**	**9.6**	**15**	**7.9**	**13**	**13**	3.4	**8.4**	**9.5**
Cobalt	0.294	--	30	2.3	1.8	0.96 J	1.1 J	0.67 J	0.9 J	0.81 J	0.98 J	1.4 J	0.61 J	0.72 J	0.75 J
Copper	4.83	700	4,100	310	5.4	2.4	2.1	2.4	1.3	2.7	1.8	1.7	1.4	11	6.6
Iron	3,245	150	72,000	5,500	4,500 J	3,900 J	3,200 J	2,700 J	2,100 J	2,900 J	4,200 J	3,700 J	2,600 J	2,600	2,500
Lead	12.3	270	800	400	12	11	1.5	11	1.3	11	9.6	8.9	15	15	17
Magnesium	238	--	--	--	360	980	950	490	720	280 J	510	420	99 J	420	380
Manganese	13.7	65	2,300	180	26 J	29 J	43 J	14 J	14	18 J	11 J	12	9.5	21	36
Mercury	0.081	1	31	2.3	0.1 U	0.1 U	0.091 U	0.036 J	0.093 U	0.054 J	0.096 U	0.051 J	0.064 J	0.037 J	0.05 J
Nickel	1.21	130	2,000	150	3.7	3.6	4.7	2.5 J	4.8	2.4 J	2.4	3.2	1.5 J	2.6 J	3.6
Potassium	116	--	--	--	410	540	900	370	360 J	290 J	420	490 J	370 U	350	330 J
Selenium	0.563	2.1	510	39	0.3 J	0.25 J	0.49 J	0.65 U	0.9	0.65 U	0.37 J	0.6 U	0.74 U	0.71 U	0.68 U
Silver	0.14	3.4	510	39	0.31 U	0.31 U	0.28 U	0.32 U	0.27 J	0.32 U	0.29 U	0.3 U	0.37 U	0.35 U	0.34 U
Sodium	80.9	--	--	--	60 J	94 J	340	49 J	220 J	43 J	63 J	49 J	54 J	53 J	97 J
Thallium	0.36	--	6.6	0.51	3.1 U	3.1 U	2.8 U	3.2 U	2.8 U	3.2 U	2.9 U	3 U	3.7 U	3.5 U	3.4 U
Vanadium	8.9	--	520	39	16	17	13	14	11	14	19	20	11	13	13
Zinc	10.8	1,200	31,000	2,400	19	24	14	11	12	13	5.9	4.6	3.4 J	23 J	92 J
Wet Chemistry (mg/kg)															
Cyanide	--	0.28	2,000	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for surface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
R - Unreliable result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Howell/CLT
Checked By: D.Brown/CLT

TABLE 5-4
Subsurface Soil Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background SB 2X Mean	NC SSLs (Jan. 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-IS100	IR86-IS101	IR86-IS102	IR86-IS103	IR86-IS104	IR86-IS105	IR86-IS106	IR86-IS107		
Sample ID					IR86-SB100-06-07-09D	IR86-SB101-06-07-09D	IR86-SB102-07-08-09D	IR86-SB103-08-09-09D	IR86-SB104-08-09-09D	IR86-SB105-05-06-09D	IR86-SB106-07-08-09D	IR86-SB107-16-17-09D	IR86-SB107-07-08-09D	IR86-SB107D-07-08-09D
Sample Date					10/08/09	10/08/09	10/09/09	10/09/09	10/09/09	10/09/09	10/10/09	10/10/09	10/11/09	10/11/09
Chemical Name														
Volatile Organic Compounds (µg/kg)														
Acetone	--	24,000	63,000,000	6,100,000	19 U	17 U	17	21 J	25 J	16 U	23 U	21 U	39 U	22 UJ
Semivolatile Organic Compounds (µg/kg)														
Acetophenone	--	--	2,500,000	780,000	300 U	300 R	290 U	280 R	320 UJ	300 U	310 U	300 U	300 U	300 U
Benzaldehyde	--	--	1,200,000	780,000	300 U	300 UJ	290 U	280 UJ	320 UJ	300 U	310 U	300 U	300 U	300 U
Benzo(a)anthracene	--	180	2,100	150	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Benzo(a)pyrene	--	59	210	15	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Benzo(b)fluoranthene	--	600	2,100	150	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Benzo(k)fluoranthene	--	5,900	21,000	1,500	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Chrysene	--	18,000	210,000	15,000	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Fluoranthene	--	330,000	2,200,000	230,000	2.1 J	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Naphthalene	--	210	18,000	3,600	4 U	4 U	2.9 J	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Phenanthrene	--	57,000	17,000,000	1,700,000	4 U	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Pyrene	--	220,000	1,700,000	170,000	1.8 J	4 U	3.9 U	3.8 U	4.2 U	3.9 U	4.1 U	4 U	4 U	3.9 U
Pesticide/Polychlorinated Biphenyls (µg/kg)														
4,4'-DDD	--	240	7,200	2,000	3.9 UJ	3.9 U	3.9 U	3.7 U	4.2 U	3.8 U	4.1 U	4 U	4 U	3.9 U
4,4'-DDE	--	--	5,100	1,400	3.9 UJ	3.9 U	1 J	3.7 U	4.2 U	3.8 U	4.1 U	4 U	4 U	3.9 U
4,4'-DDT	--	340	7,000	1,700	1.5 J	3.9 U	3.9 U	3.7 U	4.2 U	3.8 U	1.7 J	4 U	4 U	3.9 U
Aldrin	--	--	100	29	2 UJ	2 U	2 U	1.9 U	2.1 U	2 U	2.1 U	2 U	2.1 U	2 U
Dieldrin	--	0.81	110	30	3.9 UJ	3.9 U	3.9 U	3.7 U	4.2 U	3.8 U	4.1 U	4 U	4 U	3.9 U
Endosulfan II	--	5,600	370,000	37,000	0.83 J	3.9 U	3.9 U	3.7 U	4.2 U	0.41 J	4.5	4 U	4 U	0.55 J
Endosulfan sulfate	--	5,600	370,000	37,000	3.9 UJ	3.9 U	3.9 U	3.7 U	4.2 U	3.8 U	4.1 U	4 U	4 U	3.9 U
Endrin ketone	--	810	19,000	1,800	3.9 UJ	3.9 U	3.9 U	3.7 U	4.2 U	3.8 U	4.1 U	4 U	4 U	3.9 U
Heptachlor epoxide	--	0.82	190	53	2 UJ	2 U	2 U	1.9 U	2.1 U	2 U	2.1 U	2 U	2.1 U	2 U
Total Metals (mg/kg)														
Aluminum	10,369	--	99,000	7,700	9,600	14,000	19,000	15,000	5,800	16,000	38,000 J	6,900 J	18,000 J	20,000 J
Antimony	0.36	--	41	3.1	0.61 UJ	0.6 UJ	0.6 UJ	0.58 UJ	0.64 UJ	0.59 UJ	0.63 UJ	0.6 UJ	0.61 UJ	0.6 UJ
Arsenic	2.12	5.8	1.6	0.39	0.47 J	0.49 J	**2.6**	0.79	0.64 U	0.91	1.2 J	0.56 J	0.39 J	0.53 J
Barium	16.6	580	18,000	1,500	14	20	21	20	8.3	17	44	24	26	22
Beryllium	0.165	--	200	16	0.054 J	0.058 J	0.093 J	0.04 J	0.26 U	0.036 J	0.42	0.24 U	0.24 U	0.076 J
Cadmium	0.023	3	80	7	0.12 U	0.12 U	0.12 U	0.12 U	0.13 U	0.12 U	0.041 J	0.12	0.021 J	0.025 J
Calcium	441	--	--	--	740	100 J	99 J	180 J	50 J	240 J	120 J	130 J	89 J	49 J
Chromium	14.5	3.8	5.6	0.29	**8.7**	**13**	**18**	**14**	**6.9**	**14**	**41**	**9.9**	**15**	**17**
Cobalt	0.822	--	30	2.3	1 J	0.96 J	1.8	1.3 J	0.58 J	1.4 J	2.1	0.97 J	1.3 J	1.3 J
Copper	2.56	700	4,100	310	0.15 J	1.1	0.3 U	0.54	0.52	0.19 J	3.2	1.1	0.42 J	0.11 J
Iron	5,439	150	72,000	5,500	2,300 J	2,700 J	15,000 J	3,800 J	1,300 J	4,900 J	8,300 J	1,800 J	4,000 J	6,600 J
Lead	8.49	270	800	400	7	13	0.6 U	11	5.3	7.8	15	4.1	7.3	8
Magnesium	363	--	--	--	340	570	700	630	220 J	560	1,600	330	660	660
Manganese	9.25	65	2,300	180	8.2	12	19	19	11	15	24 J	16 J	19 J	15 J
Mercury	0.071	1	31	2.3	0.1 U	0.1 U	0.099 U	0.096 U	0.11 U	0.098 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	2.27	130	2,000	150	1.6 J	2 J	2.7	2.3	0.99 J	2.7	8.1	1.7 J	2.8	2.9
Potassium	361	--	--	--	220 J	360 J	490 J	480 J	330 J	430 J	2,200	470	580	510
Selenium	0.505	2.1	510	39	0.61 U	0.6 U	0.23 J	0.3 J	0.64 U	0.41 J	0.84 J	0.6 U	0.28 J	0.6 U
Sodium	68.3	--	--	--	300 U	300 U	33 J	31 J	320 U	20 J	110 J	40 J	55 J	50 J
Vanadium	17.2	--	520	39	13	16	33	18	7.7	21	37	8.6	21	24
Zinc	6.59	1,200	31,000	2,400	3.7	4.6	6	6.9	3.6	5.9	16	5.8	6.2	6.2

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
R - Unreliable Result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 5-4
Subsurface Soil Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID / Sample ID / Sample Date / Chemical Name	Camp Lejeune Background SB 2X Mean	NC SSLs (Jan. 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	IR86-IS108	IR86-IS109	IR86-IS110	IR86-IS111	IR86-IS112	IR86-IS113	IR86-IS114
Sample ID					IR86-SB108-05-06-09D	IR86-SB109-07-08-09D	IR86-SB110-06-07-09D	IR86-SB111-01-02-09D	IR86-SB112-05-06-09D	IR86-SB113-02-03-09D	IR86-SB114-05-06-09D
Sample Date					10/11/09	10/06/09	10/12/09	10/12/09	10/12/09	10/12/09	10/13/09
Volatile Organic Compounds (µg/kg)											
Acetone	--	24,000	63,000,000	6,100,000	25	15 J	22 UJ	28 U	2.5 J	18 UJ	3.1 J
Semivolatile Organic Compounds (µg/kg)											
Acetophenone	--	--	2,500,000	780,000	300 U	320 R	350 U	290 U	340 U	290 U	24 J
Benzaldehyde	--	--	1,200,000	780,000	300 U	320 UJ	350 U	290 U	340 U	290 U	28 J
Benzo(a)anthracene	--	180	2,100	150	1.4 J	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Benzo(a)pyrene	--	59	210	15	2.2 J	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Benzo(b)fluoranthene	--	600	2,100	150	6.3	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Benzo(g,h,i)perylene	--	360,000	1,700,000	170,000	4.5	4.2 U	4.7 U	3.9 U	4.4 U	3.9 U	4.4 U
Benzo(k)fluoranthene	--	5,900	21,000	1,500	1.8 J	4.2 U	4.7 U	3.9 U	4.4 U	3.9 U	4.4 U
Chrysene	--	18,000	210,000	15,000	3.8 J	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Fluoranthene	--	330,000	2,200,000	230,000	2.8 J	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150	3.5 J	4.2 U	4.7 UJ	3.9 UJ	4.4 UJ	3.9 UJ	4.4 U
Naphthalene	--	210	18,000	3,600	4 U	4.2 U	4.7 U	3.9 U	4.4 U	3.9 U	4.4 U
Phenanthrene	--	57,000	17,000,000	1,700,000	4 U	4.2 U	4.7 U	3.9 U	4.4 U	3.9 U	4.2 J
Pyrene	--	220,000	1,700,000	170,000	2.6 J	4.2 U	4.7 U	3.9 U	4.4 U	3.9 U	4.4 U
Pesticide/Polychlorinated Biphenyls (µg/kg)											
4,4'-DDD	--	240	7,200	2,000	11	1.3 J	4.7 U	3.8 U	4.4 U	3.9 U	6.5 J
4,4'-DDE	--	--	5,100	1,400	1.2 J	2.7 J	4.7 U	3.8 U	4.4 U	3.9 U	9.1 J
4,4'-DDT	--	340	7,000	1,700	1.2 J	1.5 J	4.7 U	3.8 U	4.4 U	3.9 U	5.9 J
Aldrin	--	--	100	29	2.1 U	2.2 U	2.4 U	2 U	2.3 U	2 U	2 J
Dieldrin	--	0.81	110	30	4 U	4.2 U	4.7 U	3.8 U	4.4 U	3.9 U	0.69 J
Endosulfan II	--	5,600	370,000	37,000	4 U	4.2 U	4.7 U	3.8 U	3.5 J	3.9 U	4.3 U
Endosulfan sulfate	--	5,600	370,000	37,000	0.92 J	4.2 U	4.7 U	3.8 U	4.4 U	3.9 U	4.3 U
Endrin ketone	--	810	19,000	1,800	4 U	4.2 U	4.7 U	3.8 U	4.4 U	3.9 U	17 J
Heptachlor epoxide	--	0.82	190	53	2.1 U	2.2 U	2.4 U	2 U	2.3 U	2 U	6.7 J
Total Metals (mg/kg)											
Aluminum	10,369	--	99,000	7,700	18,000 J	9,000	52,000	13,000	43,000	14,000	9,200
Antimony	0.36	--	41	3.1	0.26 J	0.64 UJ	0.32 J	0.25 J	0.44 J	0.6 UJ	0.67 U
Arsenic	2.12	5.8	1.6	0.39	**1.9**	1.1	**16**	0.59 U	**20**	0.61	0.67 U
Barium	16.6	580	18,000	1,500	22	34	52	15	43	15	13
Beryllium	0.165	--	200	16	0.078 J	0.12 J	0.54	0.24 U	0.52	0.24 U	0.27 U
Cadmium	0.023	3	80	7	0.39	0.066 J	0.27	0.035 J	0.32	0.021 J	0.065 J
Calcium	441	--	--	--	1,100	2,800	91 J	26 J	79 J	29 J	530
Chromium	14.5	3.8	5.6	0.29	**20**	**8.7**	**63**	**13**	**58**	**13**	**9**
Cobalt	0.822	--	30	2.3	1.4 J	0.56 J	2.8	1 J	2.2	1.1 J	0.79 J
Copper	2.56	700	4,100	310	2.6	1.6	4.6	0.62	5	0.3 U	1.5
Iron	5,439	150	72,000	5,500	6,800 J	2,900 J	24,000 J	2,700 J	25,000 J	5,400 J	2,500
Lead	8.49	270	800	400	19	12	20	6.8	19	6.6	7.8
Magnesium	363	--	--	--	760	280 J	2,200	450	1,800	480	200 J
Manganese	9.25	65	2,300	180	15 J	11	23	13	18	11	7.3
Mercury	0.071	1	31	2.3	0.1 U	0.019 J	0.12 U	0.098 U	0.047 J	0.034 J	0.037 J
Nickel	2.27	130	2,000	150	3.5	1.5 J	8.2	2.1 J	6.1	1.9 J	1.4 J
Potassium	361	--	--	--	630	200 J	2,500 J	430 J	1,900 J	350 J	270 J
Selenium	0.505	2.1	510	39	0.61 U	0.69	0.67 J	0.59 U	0.92 J	0.6 U	0.67 U
Sodium	68.3	--	--	--	65 J	22 J	130 J	40 J	100 J	41 J	48 J
Vanadium	17.2	--	520	39	28	11	100	16	120	20	13
Zinc	6.59	1,200	31,000	2,400	12	4.8	19	4.3	16	3.9	2.3 J

Notes:

Shading indicates exceedance of two times the mean base background concentration for subsurface soil

Bold box indicates exceedance of NC SSLs

Bold text indicates exceedance of Adjusted Industrial Soil RSLs

Underline indicates exceedance of Adjusted Residential Soil RSLs

µg/kg - Micrograms per kilogram
J - Analyte present, value may or may not be accurate or precise
mg/kg - Milligrams per kilogram
NA - Not analyzed
NC SSLs - NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
R - Unreliable Result
RSLs - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K. Ramsey/CLT
Checked By: T.Grim/CLT

TABLE 5-5
Surficial Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2× Mean	NCGWQS (January, 2010)*[1]	IR86-MW03	IR86-MW09	IR86-MW10IW	IR86-MW27IW	IR86-MW38IWA	IR86-MW39	IR86-MW40		IR86-MW41	IR86-MW47	IR86-MW48	IR86-MW52	IR86-MW53	IR86-MW56		IR86-MW58		
Sample ID			IR86-GW03-09D	IR86-GW09-09D	IR86-GW10IW-09D	IR86-GW27IW-09D	IR86-GW38IWA-09D	IR86-GW39-10A	IR86-GW40-09D	IR86-GW40D-09D	IR86-GW41-09D	IR86-GW47-09D	IR86-GW48-09D	IR86-GW52-09D	IR86-GW53-09D	IR86-GW56-09D	IR86-GW56-09D	IR86-GW58-09D	IR86-GW58-10A	IR86-GW58D-10A
Sample Date			12/14/09	12/11/09	12/14/09	12/10/09	12/10/09	01/13/10	12/15/09	12/15/09	12/07/09	12/09/09	12/13/09	12/09/09	12/08/09	12/16/09	03/16/10	12/16/09	03/16/10	03/16/10
Chemical Name																				
Volatile Organic Compounds (µg/L)																				
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	--	200,000	1 U	1 U	620	1.5	1 U	1 U	1 U	1 U	28	1 U	1 U	1 U	1 U	1 U	NA	1 U	NA	NA
1,1-Dichloroethane	--	6	1 U	1 U	3.4	0.19 J	1 U	1 U	0.3 J	0.35 J	0.52 J	0.36 J	0.67 J	1 U	0.2 J	1 U	NA	1 U	NA	NA
1,1-Dichloroethene	--	7	1 U	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	0.63 J	1 U	1 U	1 U	1 U	2.3	NA	0.48 J	NA	NA
2-Hexanone	--	280	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	NA	NA
Benzene	--	1	1 U	1 U	1.9	0.75 J	0.22 J	0.11 J	1 U	1 U	0.34 J	9.6	0.86 J	11	1 U	4.3	NA	1.2 J	NA	NA
Carbon disulfide	--	700	1 U	1 U	1 U	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 UJ	NA	NA
Chloroform	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	2 J	NA	NA
Chloromethane	--	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	1 U	NA	1 U	NA	NA
cis-1,2-Dichloroethene	--	70	1 U	1 U	37	15	0.57 J	1 U	1.6	1.4	4.2	0.7 J	1.5	0.22 J	1 U	28	NA	150 J	NA	NA
Cyclohexane	--	1,300	1 U	1 U	1.5	32	1 U	0.61 J	1 U	1 U	1 U	8	4.7	1 U	1 U	1 U	NA	1 U	NA	NA
Dichlorodifluoromethane (Freon-12)	--	1,000	1 U	1 U	51	1.4	1 U	1 U	1 UJ	1 UJ	1.8	1 U	1 U	1 U	1 U	1 U	NA	2.8 J	NA	NA
Ethylbenzene	--	600	1 U	1 U	0.92 J	1 U	1 U	0.83 J	1 U	1 U	1 U	1 U	1 U	4.6	1 U	1 U	NA	1 U	NA	NA
Isopropylbenzene	--	70	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	1 U	0.46 J	1 U	1 U	NA	1 U	NA	NA
Methyl-tert-butyl ether (MTBE)	--	20	1 U	1 U	1 U	1 U	1 U	66	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	NA	NA
Methylcyclohexane	--	--	5 U	5 U	5 U	2.6 J	5 U	5 U	5 U	5 U	5 U	4.1 J	5 U	5 U	5 U	5 U	NA	5 U	NA	NA
Tetrachloroethene	--	0.7	1 U	1 U	190	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	NA	NA
Toluene	--	600	1 U	1 U	2.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.1	1 U	1 U	NA	0.48 J	NA	NA
trans-1,2-Dichloroethene	--	100	1 U	1 U	1.1	0.22 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6	NA	3.7 J	NA	NA
Trichloroethene	--	3	0.5 U	0.5 U	54	13	1.3	0.5 U	3.4	3.2	3.3	8	0.56	0.5 U	0.5 U	2.4	NA	52 J	NA	NA
Vinyl chloride	--	0.03	0.5 U	0.5 U	19	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	68 J	NA	NA
Xylene, total	--	500	0.5 U	0.5 U	6.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.8	0.5 U	0.5 U	NA	0.5 U	NA	NA
Semivolatile Organic Compounds (µg/L)																				
Acenaphthylene	--	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	NA	0.29	NA	NA
Benzo(a)pyrene	--	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Benzo(b)fluoranthene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Benzo(g,h,i)perylene	--	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Benzo(k)fluoranthene	--	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
bis(2-Ethylhexyl)phthalate	--	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	5.1 U	NA	NA
Dibenz(a,h)anthracene	--	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Fluorene	--	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Indeno(1,2,3-cd)pyrene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.2 U	NA	NA
Naphthalene	--	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	NA	0.19 J	NA	NA
Pesticide/Polychlorinated Biphenyls (µg/L)																				
4,4'-DDD	--	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.023 J	NA	0.026 UJ	NA	NA
Total Metals (µg/L)																				
Aluminum	1,886	3,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390 U	NA	1,200	NA	NA
Antimony	3.28	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	3.4 J	NA	NA
Arsenic	5.77	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Barium	86.2	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16 J	NA	39	NA	NA
Calcium	69,078	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160,000	NA	110,000	NA	NA
Chromium	3.13	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	2.7 J	NA	NA
Copper	2.76	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4 J	NA	5 U	NA	NA
Iron	5,999	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,900	NA	11,000	NA	NA
Lead	2.8	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.1 J	NA	6.8 J	NA	NA
Magnesium	6,363	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,200 J	NA	6,500	NA	NA
Manganese	214	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51	NA	170	NA	NA
Potassium	3,277	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,000 J	NA	3,000 J	NA	NA
Silver	0.77	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3 J	NA	1.7 J	NA	NA
Sodium	22,508	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23,000 J	NA	28,000 J	NA	NA
Zinc	42.1	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.4 J	NA	9 J	NA	NA
Natural Attenuation Indicator Parameters																				
Alkalinity (mg/L)	--	--	6 J	39	7.2 J	180	10 U	28	17	NA	290	59	40	280	140	430	NA	290	NA	NA
Chloride (mg/L)	--	--	6.9 B	6 B	38 B	17 B	16 B	18 B	14 B	NA	12 B	6 B	18 B	13 B	7.4 B	15 B	NA	17 B	NA	NA
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
Methane (µg/L)	--	--	10	13	1,000 B	440 B	11 B	11	22 B	NA	110 B	150 B	1,000	820 B	94 B	610	NA	1,700	NA	NA
Sulfate (mg/L)	--	--	19 B	16 B	94 B	56 B	5,700 B	43 B	44 B	NA	130 B	62 B	0.25 BJ	16	220 B	10 B	NA	32 B	NA	NA
Sulfide (mg/L)	--	--	1 U	1 U	1.7	0.64 J	18	0.82 J	1 U	NA	1 U	0.64 J	0.99 J	1 U	1 U	1 U	NA	1 U	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	5.8	3.3	6.4	5.1	11	2.4	2.7	NA	2.2	2.4	6.1	5.3	5	1.9	NA	7.5	NA	NA
Iron (mg/L)	5.999	0.3	0.1 B	0.3 B	9.3 B	4 B	800 B	4.9	7.2 B	NA	15	7.5	6 B	14	5.4	3.9 B	NA	11 B	NA	NA
Manganese (mg/L)	0.214	0.05	0.088	0.007 J	0.069	0.082	4.8	0.027	0.11	NA	0.15	0.029	0.037	0.17	0.13	0.051	NA	0.17	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more

1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available

µg/L - Micrograms per liter

B - Analyte not detected above the level reported in blanks

J - Analyte present, value may or may not be accurate or

NA - Not analyzed

NCGWQS - North Carolina Groundwater Quality Standards

R - Unreliable result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D.Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-5
Surficial Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2× Mean	NCGWQS (January, 2010)*[1]	IR86-MW59		IR86-MW60	IR86-MW61	IR86-MW62		IR86-MW63	IR86-MW64	IR86-MW65	USTAS410S-MW02	SWMU318-MW01		SWMU318-MW05	SWMU318-MW08
Sample ID			IR86-GW59-09D	IR86-GW59D-09D	IR86-GW60-09D	IR86-GW61-09D	IR86-GW62-09D	IR86-GW62D-09D	IR86-GW63-10A	IR86-GW64-09D	IR86-GW65-10A	USTAS410S-GW02-09D	SWMU318-GW01-09D	SWMU318-GW01D-09D	SWMU318-GW05-09D	SWMU318-GW08-09D
Sample Date			12/12/09	12/12/09	12/18/09	12/12/09	12/14/09	12/14/09	01/13/10	12/16/09	03/24/10	12/09/09	12/10/09	12/10/09	12/15/09	12/08/09
Chemical Name																
Volatile Organic Compounds (µg/L)																
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	--	200,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	--	6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	0.37 J	1 U	0.42 J
1,1-Dichloroethene	--	7	1 U	1 U	1 U	4	1 U	1 U	0.42 J	1 U	1 U	1 U	1 U	1 U	1 U	0.27 J
2-Hexanone	--	280	5 U	5 U	5 U	5 U	5 U	5 U	14	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U
Benzene	--	1	1 U	1 U	2.2	1	1 U	1 U	0.27 J	1 U	1 U	1 U	1 U	1 U	1 U	1.9
Carbon disulfide	--	700	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	--	70	1 U	1 U	1 U	0.77 J	0.44 J	0.42 J	0.45 J	1 U	0.5 J	1 U	1 U	1 U	1 U	1 U
Chloromethane	--	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	--	70	1 U	1 U	9.9	79	1 U	1 U	12	1 U	1 U	1 U	0.24 J	0.21 J	0.83 J	1.5
Cyclohexane	--	1,300	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (Freon-12)	--	1,000	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	2 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	--	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.38 J	1 U	1 U	1 U	1 U
Isopropylbenzene	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl-tert-butyl ether (MTBE)	--	20	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Methylcyclohexane	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	--	600	1 U	1 U	0.2 J	1 U	1 U	1 U	1 U	1 U	1 U	0.19 J	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	--	100	1 U	1 U	0.54 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	--	3	0.5 U	0.5 U	1.8	260	0.5 U	0.5 U	17	0.5 U	1 U	0.5 U	0.5 U	0.5 U	0.53	0.79
Vinyl chloride	--	0.03	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Semivolatile Organic Compounds (µg/L)																
Acenaphthylene	--	200	0.21 U	0.21 U	0.27 U	0.26	0.2 U	0.21 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	--	0.005	0.21 R	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	0.05	0.21 R	0.21 U	0.13 J	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	--	200	0.21 R	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	--	0.5	0.21 R	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	3	5.2 UJ	5.3 U	0.32 J	5.3 U	5.1 U	5.3 U	5 U	5 U	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	--	0.005	0.21 R	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
Fluorene	--	300	0.21 U	0.21 U	0.12 J	0.12 J	0.2 U	0.21 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	--	0.05	0.21 R	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 R	NA	NA	NA	NA	NA	NA
Naphthalene	--	6	0.21 U	0.21 U	0.22 U	0.21 U	0.2 U	0.21 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA
Pesticide/Polychlorinated Biphenyls (µg/L)																
4,4'-DDD	--	0.1	0.027 U	0.026 U	0.027 U	0.026 UJ	0.026 U	0.026 U	0.025 U	0.025 U	NA	NA	NA	NA	NA	NA
Total Metals (µg/L)																
Aluminum	1,886	3,700	200 U	200 U	200 U	NA	70 J	150 J	420	1,300	NA	NA	NA	NA	NA	NA
Antimony	3.28	6	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
Arsenic	5.77	10	10 U	10 U	10 U	NA	3.4 J	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
Barium	86.2	700	14 J	15 J	45	NA	71	67	39	12 J	NA	NA	NA	NA	NA	NA
Calcium	69,078	--	140,000	130,000	290,000	NA	110,000	110,000	130,000	58,000	NA	NA	NA	NA	NA	NA
Chromium	3.13	10	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U	NA	NA	NA	NA	NA	NA
Copper	2.76	1,000	5 U	5 U	3 J	NA	5 U	5 U	5 U	5 U	NA	NA	NA	NA	NA	NA
Iron	5,999	300	4,400	4,600	8,200	NA	8,400	8,300	1,000	360	836	NA	NA	NA	NA	NA
Lead	2.8	15	4.1 J	4.3 J	10 U	NA	10 U	3.4 J	10 U	10 U	NA	NA	NA	NA	NA	NA
Magnesium	6,363	--	3,600 J	3,800 J	6,900	NA	4,600 J	4,500 J	3,500 J	5,000 U	NA	NA	NA	NA	NA	NA
Manganese	214	50	72	69	140	NA	160	160	45	13 J	88.5	NA	NA	NA	NA	NA
Potassium	3,277	--	1,600 J	2,400 J	2,400 J	NA	2,200 J	2,500 J	2,100 J	5,000 U	NA	NA	NA	NA	NA	NA
Silver	0.77	20	1.7 J	2.3 J	2.1 J	NA	5 U	5 U	1.9 J	2 J	NA	NA	NA	NA	NA	NA
Sodium	22,508	--	14,000	14,000 J	14,000 J	NA	17,000	16,000	13,000	5,700 J	NA	NA	NA	NA	NA	NA
Zinc	42.1	1,000	20 U	20 U	20 U	NA	20 U	20 U	20 U	20 U	NA	NA	NA	NA	NA	NA
Natural Attenuation Indicator Parameters																
Alkalinity (mg/L)	--	--	340	330	350	520	300	NA	280	120	24	69	110	100	8.1 J	320
Chloride (mg/L)	--	--	12 B	12 B	12 B	16 B	14 B	NA	10 B	4.5 B	6	6.7 B	6.7 B	6.7 B	23 B	9.9 B
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	0.72 J	10 U	10 U	10 U	10 U	10 U
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	0.78 J	10 U	10 U	10 U	10 U	10 U
Methane (µg/L)	--	--	36 B	34	14	230 B	25	NA	34	4.3 J	3.3 J	430 B	56 B	55 B	860	85 B
Sulfate (mg/L)	--	--	9.5	9.6 B	410	21 B	0.24 BJ	NA	11 B	16 B	7.8	13	120 B	120 B	47 B	95 B
Sulfide (mg/L)	--	--	1 U	1 U	1 U	1 U	1 U	NA	0.82 J	1 U	3	1 U	1 U	1 U	1.9	7.5
Total organic carbon (TOC) (mg/L)	--	--	2.1	2	0.74 J	3.2	1.6	NA	1.8	0.79 J	0.95 J	9.4	3.9	4	4.9	1.6
Iron (mg/L)	5.999	0.3	4.4 B	4.6 B	8.2	3.4	8.4 B	8.3 B	1	0.36 B	0.836	29	10	10	5.6 B	6.4
Manganese (mg/L)	0.214	0.05	0.072	0.069	0.14	0.087	0.16	0.16	0.045	0.013 J	0.0885	0.0073 J	0.14	0.14	0.033	0.092

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more

1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available

µg/L - Micrograms per liter

B - Analyte not detected above the level reported in blanks

J - Analyte present, value may or may not be accurate or

NA - Not analyzed

NCGWQS - North Carolina Groundwater Quality Standards

R - Unreliable result

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D.Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-6
Upper Castle Hayne Aquifer Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	CLEAN NCGWQS (January, 2010)*[1,2]	IR86-MW15IW	IR86-MW16IW	IR86-MW17IW	IR86-MW22IW	IR86-MW29IW	IR86-MW30IW	IR86-MW31IW	IR86-MW34IW	IR86-MW38IWB	IR86-MW38IWC	IR86-MW42IW	IR86-MW43IW
Sample ID			IR86-GW15IW-09D	IR86-GW16IW-09D	IR86-GW17IW-09D	IR86-GW22IW-09D	IR86-GW29IW-09D	IR86-GW30IW-09D	IR86-GW31IW-09D	IR86-GW34IW-09D	IR86-GW38IWB-09D	IR86-GW38IWC-09D	IR86-GW42IW-09D	IR86-GW43IW-09D
Sample Date			12/14/09	12/15/09	12/11/09	12/13/09	12/15/09	12/11/09	12/16/09	12/17/09	12/10/09	12/10/09	12/12/09	12/13/09
Chemical Name														
Volatile Organic Compounds (µg/L)														
1,1-Dichloroethane	--	6	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1.5	1.5	1 U	1 U
1,1-Dichloroethene	--	7	1 U	1 U	1 U	1 U	1 U	0.85 J	1 UJ	0.58 J	0.66 J	0.45 J	1.1	1 U
2-Butanone		4,000	10 R	10 R	10 UJ	10 R	10 R	10 UJ	10 R	10 R	10 UJ	10 UJ	10 U	10 R
Acetone	--	6,000	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 U	10 U
Benzene	--	1	4	0.25 J	1 U	0.32 J	0.45 J	1.1	1 UJ	1 U	1 U	1 U	0.7 J	1 U
Carbon disulfide	--	700	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chloroform	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chloromethane	--	3	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	0.35 J	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	--	70	350 J	3.3	1 U	4	41	150	4.2 J	4.2	66	64	63	1 U
Ethylbenzene	--	600	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	1 U	1 U	1 U	1 U
Toluene	--	600	0.31 J	0.17 J	0.23 J	1 U	0.19 J	1 U	0.19 J	0.26 J	1 U	0.24 J	1.1	0.22 J
trans-1,2-Dichloroethene	--	100	10	1 U	1 U	1 U	1 U	4.2	0.14 J	1 U	0.75 J	10	0.46 J	1 U
Trichloroethene	--	3	0.5 U	3.8	0.5 U	0.5 U	140	1.1	7.7 J	3.5	2.7	3.1	330	0.5 U
Vinyl chloride	--	0.03	0.5 U	0.5 U	0.5 U	22	0.5 U	1.6	0.5 UJ	0.6	0.52	0.4 J	3.5	0.5 U
Semivolatile Organic Compounds (µg/L)														
Acenaphthylene	--	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	--	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (µg/L)														
Aluminum	8,031.8	3,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	3.2	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	89.2	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	103,991	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	9.4	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	16,021.6	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	10.2	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7,275	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	274.2	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	4,348.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	0.7	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	32,452.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	65.2	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Natural Attenuation Indicator Parameters														
Alkalinity (mg/L)	--	--	260	230	340	210	270	220	310	250	400	320	250	210
Chloride (mg/L)	--	--	13 B	13 B	14 B	13 B	17 B	10 B	32 B	14 B	23 B	25 B	28 B	14 B
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methane (µg/L)	--	--	40	35	170 B	410	200	370 B	70	53	250 B	15 B	110 B	32
Sulfate (mg/L)	--	--	3.1 B	11 B	0.13 BJ	0.46 BJ	20 B	5.2 B	100 B	630 B	370 B	1,400 B	1.5 B	5 B
Sulfide (mg/L)	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	1.4	1.4	2.3	1.3	2	0.87 J	1.9	3.4	5.1	6.9	1.7	1.7
Iron (mg/L)	16.021	0.3	4 B	7.7 B	16 B	3.5 B	4.5 B	3.4 B	4.9 B	4.3 B	3.8	9.6 B	9.6 B	1.6 B
Manganese (mg/L)	0.274	0.05	0.053	0.088	0.21	0.044	0.055	0.057	0.11	0.1	0.16	0.49	0.097	0.034

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available
2 - Project Action Limits reported where no NCGWQS, MCL, or Adjusted Tap Water RSL was available

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NCGWQS - North Carolina Groundwater Quality Standards
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D. Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-6
Upper Castle Hayne Aquifer Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	CLEAN NCGWQS (January, 2010)*[1,2]	IR86-MW44IW	IR86-MW46IW	IR86-MW47IW	IR86-MW48IW	IR86-MW52IW		IR86-MW53IW	IR86-MW54IW	IR86-MW55IW	
Sample ID			IR86-GW44IW-09D	IR86-GW46IW-09D	IR86-GW47IW-09D	IR86-GW48IW-09D	IR86-GW52IW-10A	IR86-GW52IWD-10A	IR86-GW53IW-10A	IR86-GW54IW-09D	IR86-GW55IW-09D	IR86-GW55IWD-09D
Sample Date			12/12/09	12/07/09	12/09/09	12/16/09	03/17/10	03/17/10	03/16/10	12/14/09	12/13/09	12/13/09
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1-Dichloroethane	--	6	1 U	1 U	1 U	0.25 J	1 U	1 U	1 U	1 U	0.27 J	0.31 J
1,1-Dichloroethene	--	7	2.7 J	1 U	1 U	3.7	1 U	1 U	1 U	7.6	13	13
2-Butanone		4,000	10 U	10 U	10 UJ	10 R	4 J	4 J	5 U	10 R	10 R	10 R
Acetone	--	6,000	10 U	10 U	10 UJ	10 U	47 J	42	5 U	10 U	10 U	10 U
Benzene	--	1	1.6 J	1 U	1 U	2.4	1 U	1 U	1 U	2.4	2.3	2.3
Carbon disulfide	--	700	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	--	3	1 U	1 U	1 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	--	70	210 J	1 U	1 U	110	1 U	1 U	1 U	270	190	190
Ethylbenzene	--	600	1 U	1 U	1 U	1 U	0.3 J	0.3 J	1 U	1 U	1 U	1 U
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	--	600	0.72 J	0.41 J	1 U	1 U	0.4 J	0.4 J	1 U	0.34 J	0.39 J	0.28 J
trans-1,2-Dichloroethene	--	100	1.5 J	1 U	1 U	6.4	1 U	1 U	1 U	1.4	16	15
Trichloroethene	--	3	110 J	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	260	0.28 J	0.25 J
Vinyl chloride	--	0.03	24 J	0.5 U	0.5 U	0.5 U	2 U	2 U	2 U	1.8	130	140
Semivolatile Organic Compounds (µg/L)												
Acenaphthylene	--	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	--	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (µg/L)												
Aluminum	8,031.8	3,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	3.2	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	89.2	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	103,991	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	9.4	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	16,021.6	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	10.2	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7,275	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	274.2	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	4,348.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	0.7	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	32,452.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	65.2	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Natural Attenuation Indicator Parameters												
Alkalinity (mg/L)	--	--	220	220	200	310	NA	NA	NA	230	300	NA
Chloride (mg/L)	--	--	14 B	9.4 B	7 B	20 B	NA	NA	NA	12 B	21 B	NA
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	NA	NA	NA	10 U	10 U	NA
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	NA	NA	NA	10 U	9.7 J	NA
Methane (µg/L)	--	--	690 B	21 B	7.8 JB	790	NA	NA	NA	280 B	1,200	NA
Sulfate (mg/L)	--	--	1.1	6	2.4 B	4.9 B	NA	NA	NA	0.29 J	0.34 BJ	NA
Sulfide (mg/L)	--	--	1 U	0.99 J	1 U	1 U	NA	NA	NA	1 U	1 U	NA
Total organic carbon (TOC) (mg/L)	--	--	1.7	2.7	1	2.1	NA	NA	NA	1.3	3.2	NA
Iron (mg/L)	16.021	0.3	5.7 B	5.9	3	5.5 B	NA	NA	NA	6.3 B	7.7 B	NA
Manganese (mg/L)	0.274	0.05	0.07	0.064	0.042	0.065	NA	NA	NA	0.077	0.083	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available
2 - Project Action Limits reported where no NCGWQS, MCL, or Adjusted Tap Water RSL was available

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NCGWQS - North Carolina Groundwater Quality Standards
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D. Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-6
Upper Castle Hayne Aquifer Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	CLEAN NCGWQS (January, 2010)*[1,2]	IR86-MW58IW	IR86-MW59IW	IR86-MW60IW	IR86-MW61IW	IR86-MW63IW	IR86-MW66IW
Sample ID			IR86-GW58IW-09D	IR86-GW59IW-09D	IR86-GW60IW-09D	IR86-GW61IW-09D	IR86-GW63IW-09D	IR86-GW63IW-10B
Sample Date			12/16/09	12/12/09	12/17/09	12/12/09	12/17/09	06/28/10
Chemical Name								
Volatile Organic Compounds (µg/L)								
1,1-Dichloroethane	--	6	1 U	1 U	1 U	1 U	1 U	0.5 U
1,1-Dichloroethene	--	7	6.6 J	1 U	1 U	1 U	1 U	0.5 U
2-Butanone		4,000	10 U	10 R	10 R	10 U	10 R	2.5 U
Acetone	--	6,000	10 U	4.3 J	10 U	10 U	10 U	2.5 U
Benzene	--	1	1.4 J	1 U	0.12 J	0.27 J	0.2 J	0.5 U
Carbon disulfide	--	700	1 UJ	0.21 J	1 U	1 U	1 U	0.5 U
Chloroform	--	70	1 U	1 U	1 U	0.98 J	1 U	0.5 U
Chloromethane	--	3	1 U	1 U	1 U	1 U	1 U	0.5 U
cis-1,2-Dichloroethene	--	70	100 J	1 U	0.51 J	4.4	1.7	0.5 U
Ethylbenzene	--	600	1 U	1 U	1 U	1 U	1 U	0.5 U
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	0.5 U
Toluene	--	600	0.26 J	1 U	0.22 J	1 U	1 U	0.5 U
trans-1,2-Dichloroethene	--	100	6.2 J	1 U	1 U	1 U	1 U	0.5 U
Trichloroethene	--	3	710	0.5 U	0.5 U	1.2	0.5 U	0.5 U
Vinyl chloride	--	0.03	9.1 J	0.5 U	0.5 U	0.5 U	0.5 U	1 U
Semivolatile Organic Compounds (µg/L)								
Acenaphthylene	--	200	0.2 U	0.2 UJ	0.23	0.21 U	0.23	NA
Benzo(b)fluoranthene	--	0.05	0.2 U	0.2 U	0.11 J	0.21 U	0.22 U	NA
Fluorene	--	300	0.2 U	0.2 UJ	0.1 J	0.21 U	0.22 U	NA
Total Metals (µg/L)								
Aluminum	8,031.8	3,700	200 U	340	270 U	NA	200 U	NA
Antimony	3.2	6	10 U	3.2 J	10 U	NA	10 U	NA
Barium	89.2	700	17 J	21	32	NA	24	NA
Calcium	103,991	--	140,000	69,000	130,000	NA	150,000	NA
Copper	9.4	1,000	1.6 J	5 U	1.6 J	NA	5 U	NA
Iron	16,021.6	300	3,600	1,300	3,200	NA	3,000	NA
Lead	10.2	15	5.4 J	4.5 J	7 J	NA	4.1 J	NA
Magnesium	7,275	--	3,400 J	5,000 U	3,100 J	NA	3,800 J	NA
Manganese	274.2	50	48	28	58	NA	58	NA
Potassium	4,348.6	--	6,400	6,800	5,000 U	NA	2,000 J	NA
Silver	0.7	20	2.5 J	5 U	2.1 J	NA	2.2 J	NA
Sodium	32,452.6	--	19,000 J	17,000	15,000 J	NA	12,000 J	NA
Zinc	65.2	1,000	20 U	18 J	20 U	NA	20 U	NA
Natural Attenuation Indicator Parameters								
Alkalinity (mg/L)	--	--	360	330	310	430	360	NA
Chloride (mg/L)	--	--	16 B	130 B	9.7 B	16 B	12 B	NA
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	NA
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	NA
Methane (µg/L)	--	--	830	13 B	16	71	40	NA
Sulfate (mg/L)	--	--	29 B	38	39 B	14 B	5.8 B	NA
Sulfide (mg/L)	--	--	6.8	1 U	1 U	1 U	1 U	NA
Total organic carbon (TOC) (mg/L)	--	--	0.7 J	2.8	0.48 J	2.5	2.1	NA
Iron (mg/L)	16.021	0.3	3.6 B	1.3 B	3.2 B	4	3 B	NA
Manganese (mg/L)	0.274	0.05	0.048	0.028	0.058	0.079	0.058	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.

1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available
2 - Project Action Limits reported where no NCGWQS, MCL, or Adjusted Tap Water RSL was available

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NCGWQS - North Carolina Groundwater Quality Standards
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D. Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-7
Middle Castle Hayne Aquifer Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	CLEAN NCGWQS (January, 2010)*[1,2]	IR86-MW15DW	IR86-MW16DW	IR86-MW17DW	IR86-MW18DW		IR86-MW19DW	IR86-MW31DW	IR86-MW42DW	IR86-MW44DW	IR86-MW45DW	IR86-MW49DW
Sample ID			IR86-GW15DW-10A	IR86-GW16DW-09D	IR86-GW17DW-09D	IR86-GW18DW-09D	IR86-GW18DWD-09D	IR86-GW19DW-09D	IR86-GW31DW-09D	IR86-GW42DW-09D	IR86-GW44DW-09D	IR86-GW45DW-10A	IR86-GW49DW-09D
Sample Date			01/14/10	12/15/09	12/11/09	12/15/09	12/15/09	12/14/09	12/18/09	12/13/09	12/13/09	01/15/10	12/17/09
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	--	200,000	1 U	1 U	1 U	1 U	1 U	0.52 J	1 U	1 U	1 U	1 UJ	1 U
Carbon disulfide	--	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Chloroform	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Chloromethane	--	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
cis-1,2-Dichloroethene	--	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	2.4	1 U	1 U	1 U	1 UJ	1 U
Toluene	--	600	1 U	0.37 J	0.28 J	0.21 J	0.31 J	1	1 U	0.25 J	0.44 J	1 UJ	1 U
Trichloroethene	--	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Xylene, total	--	500	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Semivolatile Organic Compounds (µg/L)													
Benzo(a)pyrene	--	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	--	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	--	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	--	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	--	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	--	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (µg/L)													
Aluminum	8,031.8	3,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	3.2	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	5.2	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	89.2	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	103,991	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	13.8	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	9.4	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	16,021.6	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	10.2	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7,275	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	274.2	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	4,348.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	0.7	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	32,452.6	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	65.2	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Natural Attenuation Indicator Parameters													
Alkalinity (mg/L)	--	--	170	220	270	250	NA	200	210	63	210	190	190
Chloride (mg/L)	--	--	16 B	38 B	88 B	72 B	NA	32 B	50 B	25 B	40 B	30 B	19 B
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U
Methane (µg/L)	--	--	4.5 J	16 B	7.1 J	35	NA	30 B	10 U	10 U	15	20	4.5 J
Sulfate (mg/L)	--	--	5.1 B	9 B	23 B	19 B	NA	6.3 B	15	9.1 B	8 B	11 B	7.7 B
Sulfide (mg/L)	--	--	1 U	1 U	1 U	1 U	NA	1 U	13	1 U	1 U	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	0.77 J	1.6	3.3	1.8	NA	1.1	1.4	9.5	2.7	1.8	1 U
Iron (mg/L)	16.021	0.3	0.61	0.46 B	0.17 B	1.1 B	NA	0.48 B	0.24	0.55 B	0.3 B	0.48	0.097 BJ
Manganese (mg/L)	0.274	0.05	0.058	0.058	0.0084 J	0.022	NA	0.033	0.033	0.0094 J	0.024	0.025	0.061

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.
1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available
2 - Project Action Limits reported where no NCGWQS, MCL, or Adjusted Tap Water RSL was available

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NCGWQS- North Carolina Groundwater Quality Standards
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D.Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-7
Middle Castle Hayne Aquifer Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2X Mean	CLEAN NCGWQS (January, 2010)*[1,2]	IR86-MW51DW		IR86-MW56DW	IR86-MW58DW	IR86-MW59DW	IR86-MW61DW
Sample ID			IR86-GW51DW-10A	IR86-GW51DWD-10A	IR86-GW56DW-10A	IR86-GW58DW-10A	IR86-GW59DW-09D	IR86-GW61DW-09D
Sample Date			01/15/10	01/15/10	01/14/10	01/13/10	12/18/09	12/18/09
Chemical Name								
Volatile Organic Compounds (µg/L)								
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	--	200,000	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	--	700	1 U	1 U	1 U	3.4	1 U	1 U
Chloroform	--	70	1 U	1 U	0.19 J	1 U	0.38 J	1 U
Chloromethane	--	3	1 U	1 U	1 U	0.18 J	1 U	0.18 J
cis-1,2-Dichloroethene	--	70	1 U	1 U	1 U	1 U	1 U	0.13 J
Tetrachloroethene	--	0.7	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	--	600	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	--	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J
Xylene, total	--	500	0.5 U	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U
Semivolatile Organic Compounds (µg/L)								
Benzo(a)pyrene	--	0.005	NA	NA	0.2 U	0.22 U	0.2 J	0.22 U
Benzo(b)fluoranthene	--	0.05	NA	NA	0.2 U	0.22 U	0.38 J	0.22 U
Benzo(g,h,i)perylene	--	200	NA	NA	0.2 U	0.22 U	0.46 J	0.22 U
Benzo(k)fluoranthene	--	0.5	NA	NA	0.2 U	0.22 U	0.31 J	0.22 U
bis(2-Ethylhexyl)phthalate	--	3	NA	NA	0.2 U	5.6 U	5.3 U	0.33 J
Dibenz(a,h)anthracene	--	0.005	NA	NA	0.2 U	0.22 U	0.55 J	0.22 U
Di-n-butylphthalate	--	700	NA	NA	0.2 U	5.6 U	5.3 U	0.2 J
Indeno(1,2,3-cd)pyrene	--	0.05	NA	NA	0.2 U	0.22 U	0.45 J	0.22 U
Total Metals (µg/L)								
Aluminum	8,031.8	3,700	NA	NA	520	420	200 U	130 J
Antimony	3.2	6	NA	NA	10 U	10 U	10 U	10 U
Arsenic	5.2	10	NA	NA	10 U	10 U	10 U	10 U
Barium	89.2	700	NA	NA	10 J	11 J	19 J	20 U
Calcium	103,991	--	NA	NA	65,000	55,000	39,000	39,000
Chromium	13.8	10	NA	NA	5.2	6.2	76	5 U
Copper	9.4	1,000	NA	NA	5 U	5 U	1.8 J	5 U
Iron	16,021.6	300	NA	NA	2,600	1,300	320	1,100
Lead	10.2	15	NA	NA	10 U	10 U	10 U	10 U
Magnesium	7,275	--	NA	NA	4,600 J	5,100	6,200	10,000
Manganese	274.2	50	NA	NA	66	47	16	22
Potassium	4,348.6	--	NA	NA	9,200	29,000	34,000 J	21,000 J
Silver	0.7	20	NA	NA	5 U	5 U	5 U	5 U
Sodium	32,452.6	--	NA	NA	48,000	99,000	210,000 J	300,000 J
Zinc	65.2	1,000	NA	NA	20 U	9.2 J	20 U	20 U
Natural Attenuation Indicator Parameters								
Alkalinity (mg/L)	--	--	250	250	200	240	330	360
Chloride (mg/L)	--	--	95 B	96 B	32 B	69 B	130 B	210 B
Ethane (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U
Ethene (µg/L)	--	--	10 U	10 U	10 U	10 U	10 U	10 U
Methane (µg/L)	--	--	19	19	30	3 J	10 U	10 U
Sulfate (mg/L)	--	--	23 B	23 B	6.1 B	23 B	38	63
Sulfide (mg/L)	--	--	5.9	1 U	8.7	1.3	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	1.5	3.9	3	2.3	2.8	1.1
Iron (mg/L)	16.021	0.3	0.5	0.54	2.6	1.3	0.32	1.1
Manganese (mg/L)	0.274	0.05	0.031	0.031	0.066	0.047	0.016	0.022

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL

* - The MCL-Groundwater value is reported in place of the NCGWQS where the MCL value is more conservative.
1 - Adjusted Tap Water RSL value reported where no NCGWQS or MCL value was available
2 - Project Action Limits reported where no NCGWQS, MCL, or Adjusted Tap Water RSL was available

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
NA - Not analyzed
NCGWQS- North Carolina Groundwater Quality Standards
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: D.Brown/CLT
Checked By: T.Grim/CLT

TABLE 5-8

Summary of Natural Attenuation Indicator Parameters - Surficial Aquifer (Dec. 2009, Jan. and March 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	DO (mg/L)	ORP (mV)	Ferrous Iron (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Iron (mg/L)	Ferric Iron* (mg/L)	Manganese (mg/L)
IR86-MW03	12/14/2009	0.31	186.8	0.0	0	0	6J	6.9B	19B	1U	5.8	10	10U	10U	0.1B	0.1	0.0088
IR86-MW09	12/11/2009	0.24	-29.4	0.0	0	0	39	6B	16B	1U	3.3	13	10U	10U	0.3B	0.3	0.007J
IR86-MW10IW	12/14/2009	0.27	-22.4	2.7	0	0	7.2J	38B	94B	1.7	6.4	1,000B	10U	10U	9.3B	6.6	0.069
IR86-MW27IW	12/10/2009	0.16	-150.2	3.4	0	0	180	17B	56B	0.64J	5.1	440B	10U	10U	4B	0.6	0.082
IR86-MW38IWA	12/10/2009	1.59	151.5	5.8	0	0	10U	16B	5,700B	18	11	11B	10U	10U	800B	794.2	4.8
IR86-MW39	1/13/2010	0.13	-83.4	4.0	0	0	28	18B	43B	0.82J	2.4	11	10U	10U	4.9	0.9	0.027
IR86-MW40	12/15/2009	0.49	50.0	3.0	0	0	17	14B	44B	1U	2.7	22B	10U	10U	7.2B	4.2	0.11
IR86-MW41	12/7/2009	0.21	-108.7	1.5	0	0	290	12B	130B	1U	2.2	110B	10U	10U	15	13.5	0.15
IR86-MW47	12/9/2009	0.21	-108.7	2.4	0	0	59	6B	62B	0.64J	2.4	150	10U	10U	7.5	5.1	0.029
IR86-MW48	12/13/2009	0.55	-19.8	2.8	0	0	40	18B	0.25BJ	0.99J	6.1	1,000	10U	10U	6B	3.2	0.037
IR86-MW52	12/9/2009	3.91	15.0	1.1	0	0	280	13B	16	1U	5.3	820B	10U	10U	14	12.9	0.17
IR86-MW53	12/8/2009	0.22	-196.9	1.2	0	0	140	7.4B	220B	1U	5	94B	10U	10U	5.4	4.2	0.13
IR86-MW56	12/16/2009	0.23	-100.2	3.6	0	0	430	15B	10B	1U	1.9	610	10U	10U	3.9B	0.3	0.051
IR86-MW58	12/16/2009	0.18	-33.9	2.0	0	0	290	17B	32B	1U	7.5	1700	10U	10U	11B	9	0.17
IR86-MW59	12/12/2009	0.15	-87.9	2.0	0	0	340	12B	9.5	1U	2.1	36B	10U	10U	4.6B	2.6	0.072
IR86-MW60	12/18/2009	0.12	-74.5	0.0	0	0	350	12B	410	1U	0.74J	14	10U	10U	8.2	8.2	0.14
IR86-MW61	12/12/2009	0.20	-34.7	2.8	0	0	520	16B	21B	1U	3.2	230B	10U	10U	3.4	0.6	0.087
IR86-MW62	12/14/2009	0.15	-94.0	1.8	0	0	300	14B	0.24BJ	1U	1.6	25	10U	10U	8.4B	6.6	0.16
IR86-MW63	1/13/2010	2.95	-60.0	1.2	0	0	280	10B	11B	0.82J	1.8	34	10U	10U	1	0**	0.045
IR86-MW64	12/16/2009	0.23	-204.2	0.0	0	0	120	4.5B	16B	1U	0.79J	4.3J	10U	10U	0.36B	0.36	0.013J
IR86-MW65	3/24/2010	1.61	35.7	NA	NA	NA	24	6	7.8	3	0.95J	3.3J	0.72J	0.78J	0.836	NA	0.0885
SWMU318-MW01	12/10/2009	0.18	-105.4	5.8	0	0	110	6.7B	120B	1U	3.9	56B	10U	10U	10	4.2	0.14
SWMU318-MW05	12/13/2009	0.22	-49.3	1.8	0	0	8.1J	23B	47B	1.9	4.9	860	10U	10U	5.6B	3.8	0.033
SWMU318-MW08	12/8/2009	0.15	-119.4	2.2	0	0	320	9.9B	95B	7.5	1.6	85B	10U	10U	6.4	4.2	0.092
USTAS410S-MW02	12/9/2009	0.40	-17.1	4.8	0	0	69	6.7B	13	1U	9.4	430B	10U	10U	29	24.2	0.0073J

Notes:

µg/L - Micrograms per liter
mg/L - Milligrams per liter
mV - Millivolts
DO - Dissolved oxygen
ORP - Oxidation reduction potential
TOC - Total organic carbon

B - Analyte not detected above the le
J - Analyte present, value may or ma
U - The material was analyzed for, but not detected
NA - Not analyzed

* Value calculated by subtracting Ferrous Iron (collected in field) from Total Iron (collected in lab)

** Field measurement of Ferrous Iron was greater than lab measurement of Iron

Generated By: K. Ramsey/CLT Checked By: T.Grim/CLT

TABLE 5-9

Summary of Natural Attenuation Indicator Parameters - Upper Castle Hayne Aquifer (Dec. 2009 and Jan. 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	DO (mg/L)	ORP (mV)	Ferrous Iron (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Iron (mg/L)	Ferric Iron* (mg/L)	Manganese (mg/L)
IR86-MW15IW	12/14/2009	0.27	-96.0	2.8	0	0	260	13B	3.1B	1U	1.4	40	10U	10U	4B	1.2	0.053
IR86-MW16IW	12/15/2009	0.12	-114.1	2.0	0	0	230	13B	11B	1U	1.4	35	10U	10U	7.7B	5.7	0.088
IR86-MW17IW	12/11/2009	0.17	-105.8	1.8	0	0	340	14B	0.13BJ	1U	2.3	170B	10U	10U	16B	14.2	0.21
IR86-MW22IW	12/13/2009	0.18	-146.9	2.6	0	0	210	13B	0.46BJ	1U	1.3	410	10U	10U	3.5B	0.9	0.044
IR86-GW29IW	12/15/2009	0.19	-112.5	3.6	8.8	0	270	17B	20B	1U	2	200	10U	10U	4.5B	0.9	0.055
IR86-MW30IW	12/11/2009	0.21	-144.5	1.8	0	0	220	10B	5.2B	1U	0.87J	370B	10U	10U	3.4B	1.6	0.057
IR86-MW31IW	12/16/2009	0.20	-112.7	2.2	0	0	310	32B	100B	1U	1.9	70	10U	10U	4.9B	2.7	0.11
IR86-MW34IW	12/17/2009	0.37	-16.2	1.7	0	0	250	14B	630B	1U	3.4	53	10U	10U	4.3B	2.6	0.1
IR86-MW38IWB	12/10/2009	0.23	-26.1	1.4	0	0	400	23B	370B	1U	5.1	250B	10U	10U	3.8	2.4	0.16
IR86-MW38IWC	12/10/2009	0.17	-13.3	4.0	0	0	320	25B	1,400B	1U	6.9	15B	10U	10U	9.6B	5.6	0.49
IR86-MW42IW	12/12/2009	0.11	-149.6	2.0	0	0	250	28B	1.5B	1U	1.7	110B	10U	10U	9.6B	7.6	0.097
IR86-MW43IW	12/13/2009	0.19	-179.8	0.7	0	0	210	14B	5B	1U	1.7	32	10U	10U	1.6B	0.9	0.034
IR86-MW44IW	12/12/2009	0.19	-152.6	2.8	0	0	220	14B	1.1	1U	1.7	690B	10U	10U	5.7B	2.9	0.07
IR86-MW46IW	12/7/2009	0.31	-45.0	1.3	4.84	0	220	9.4B	6	0.99J	2.7	21B	10U	10U	5.9	4.6	0.064
IR86-MW47IW	12/9/2009	0.26	-161.2	2.6	0	0	200	7B	2.4B	1U	1	7.8JB	10U	10U	3	0.4	0.042
IR86-MW48IW	12/16/2009	0.18	-167.4	3.4	0	0	310	20B	4.9B	1U	2.1	790	10U	10U	5.5B	2.1	0.065
IR86-MW52IW	3/17/2010	0.82	162.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR86-MW53IW	3/16/2010	0.23	10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR86-MW54IW	12/14/2009	2.43	-129.7	2.6	0	0	230	12B	0.29J	1U	1.3	280B	10U	10U	6.3B	3.7	0.077
IR86-MW55IW	12/13/2009	0.13	-105.4	3.2	0	0	300	21B	0.34BJ	1U	3.2	1,200	10U	9.7J	7.7B	4.5	0.083
IR86-MW58IW	12/16/2009	0.16	-69.4	1.6	0	0	360	16B	29B	6.8	0.7J	830	10U	10U	3.6B	2.0	0.048
IR86-MW59IW	12/12/2009	0.13	-356.1	0.5	0	0	330	130B	38	1U	2.8	13B	10U	10U	1.3B	0.8	0.028
IR86-MW60IW	12/17/2009	0.17	-125.3	1.1	0	0	310	9.7B	39B	1U	0.48J	16	10U	10U	3.2B	2.1	0.058
IR86-MW61IW	12/12/2009	0.19	-110.7	3.0	0	0	430	16B	14B	1U	2.5	71	10U	10U	4	1	0.079
IR86-MW63IW	12/17/2009	0.23	-88.6	3.2	0	0	360	12B	5.8B	1U	2.1	40	10U	10U	3B	0**	0.058
IR86-MW66IW	6/28/2010	0.77	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

µg/L - Micrograms per liter

mg/L - Milligrams per liter

mV - Millivolts

DO - Dissolved oxygen

ORP - Oxidation reduction potential

B - Analyte not detected above the lev

J - Analyte present, value may or may

U - The material was analyzed for, but not detected

NA - Not analyzed

TOC - Total organic carbon

* Value calculated by subtracting Ferrous Iron (collected in field) from Total Iron (collected in lab)

** Field measurement of Ferrous Iron was greater than lab measurement of Iron

Generated By: K. Ramsey/CLT Checked By: T.Grim/CLT

TABLE 5-10

Summary of Natural Attenuation Indicator Parameters – Middle Castle Hayne Aquifer (December 2009 – January 2010)

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Well ID	Sample Date	DO (mg/L)	ORP (mV)	Ferrous Iron (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	TOC (mg/L)	Methane (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Iron (mg/L)	Ferric Iron* (mg/L)	Manganese (mg/L)
IR86-MW15DW	1/14/2010	0.18	-150.1	0.2	2	0	170	16B	5.1B	1U	0.77J	4.5J	10U	10U	0.61	0.41	0.058
IR86-MW16DW	12/15/2009	0.17	-113.6	0.2	0	0	220	38B	9B	1U	1.6	16B	10U	10U	0.46B	0.26	0.058
IR86-MW17DW	12/11/2009	0.13	-113.3	0.0	0	0	270	88B	23B	1U	3.3	7.1J	10U	10U	0.17B	0.17	0.0084J
IR86-MW18DW	12/15/2009	0.27	-146.4	0.6	4.4	0	250	72B	19B	1U	1.8	35	10U	10U	1.1B	0.5	0.022
IR86-MW19DW	12/14/2009	0.31	-136.1	2.1	0	0	200	32B	6.3B	1U	1.1	30B	10U	10U	0.48B	0**	0.033
IR86-MW31DW	12/18/2009	0.20	-103.0	0.3	0	0	210	50B	15	13	1.4	10U	10U	10U	0.24	0**	0.033
IR86-MW42DW	12/13/2009	0.40	-130.7	0.7	0	0	63	25B	9.1B	1U	9.5	10U	10U	10U	0.55B	0**	0.0094J
IR86-MW44DW	12/13/2009	0.18	-159.0	1.2	0	0	210	40B	8B	1U	2.7	15	10U	10U	0.3B	0**	0.024
IR86-MW45DW	1/15/2010	0.17	-210.6	1.0	0	0	190	30B	11B	1U	1.8	20	10U	10U	0.48	0**	0.025
IR86-MW49DW	12/17/2009	0.15	-97.1	0.0	0	0	190	19B	7.7B	1U	1U	4.5J	10U	10U	0.097BJ	0.097	0.061
IR86-MW51DW	1/15/2010	0.18	-204.9	0.6	0	0	250	95B	23B	5.9	1.5	19	10U	10U	0.54	0**	0.031
IR86-MW56DW	1/14/2010	0.20	-181.5	0.6	0	0	200	32B	6.1B	8.7	3	30	10U	10U	2.6	2	0.066
IR86-MW58DW	1/13/2010	0.16	-306.6	0.0	0	0	240	69B	23B	1.3	2.3	3J	10U	10U	1.3	1.3	0.047
IR86-MW59DW	12/18/2009	0.06	-165.6	0.0	0	0	330	130B	38	1U	2.8	10U	10U	10U	0.32	0.32	0.016
IR86-MW61DW	12/18/2009	0.07	-203.4	1.1	0	0	360	210B	63	1U	1.1	10U	10U	10U	1.1	0	0.022

Notes:

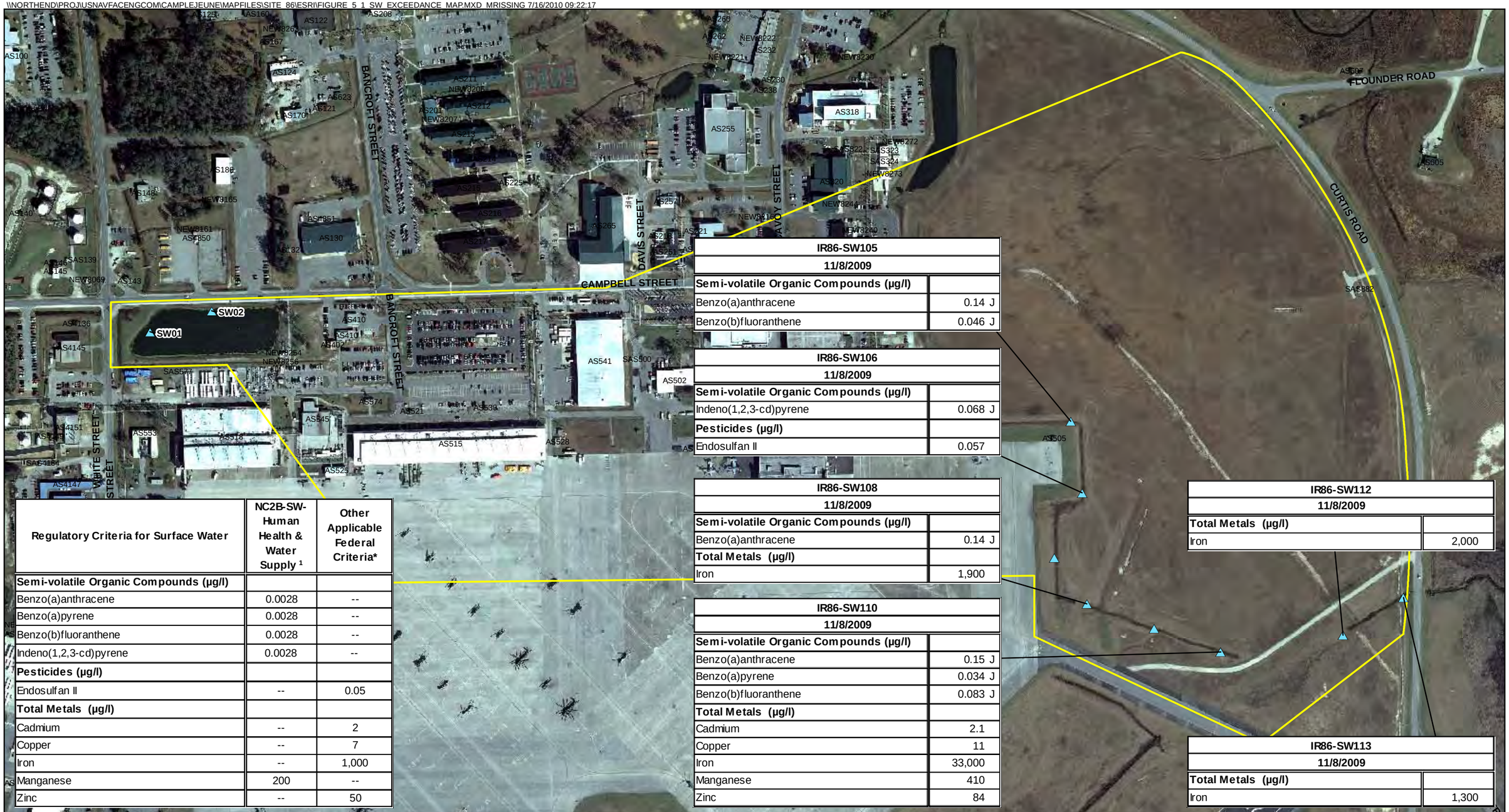
µg/L - Micrograms per liter
mg/L - Milligrams per liter
mV - Millivolts
DO - Dissolved oxygen
ORP - Oxidation reduction potential
TOC - Total organic carbon

B - Analyte not detected above the le
J - Analyte present, value may or ma
U - The material was analyzed for, but not detected
NA - Not analyzed

* Value calculated by subtracting Ferrous Iron (collected in field) from Total Iron (collected in lab)

** Field measurement of Ferrous Iron was greater than lab measurement of Iron

Generated By: K. Ramsey/CLT Checked By: T.Grim/CLT



IR86-SW105	
11/8/2009	
Semi-volatile Organic Compounds (µg/l)	
Benzo(a)anthracene	0.14 J
Benzo(b)fluoranthene	0.046 J

IR86-SW106	
11/8/2009	
Semi-volatile Organic Compounds (µg/l)	
Indeno(1,2,3-cd)pyrene	0.068 J
Pesticides (µg/l)	
Endosulfan II	0.057

IR86-SW108	
11/8/2009	
Semi-volatile Organic Compounds (µg/l)	
Benzo(a)anthracene	0.14 J
Total Metals (µg/l)	
Iron	1,900

IR86-SW110	
11/8/2009	
Semi-volatile Organic Compounds (µg/l)	
Benzo(a)anthracene	0.15 J
Benzo(a)pyrene	0.034 J
Benzo(b)fluoranthene	0.083 J
Total Metals (µg/l)	
Cadmium	2.1
Copper	11
Iron	33,000
Manganese	410
Zinc	84

IR86-SW112	
11/8/2009	
Total Metals (µg/l)	
Iron	2,000

IR86-SW113	
11/8/2009	
Total Metals (µg/l)	
Iron	1,300

Regulatory Criteria for Surface Water	NC2B-SW-Human Health & Water Supply [1]	Other Applicable Federal Criteria*
Semi-volatile Organic Compounds (µg/l)		
Benzo(a)anthracene	0.0028	--
Benzo(a)pyrene	0.0028	--
Benzo(b)fluoranthene	0.0028	--
Indeno(1,2,3-cd)pyrene	0.0028	--
Pesticides (µg/l)		
Endosulfan II	--	0.05
Total Metals (µg/l)		
Cadmium	--	2
Copper	--	7
Iron	--	1,000
Manganese	200	--
Zinc	--	50

Legend

- Surface Water Sampling Location
- March 2010 Site 86 Boundary

Notes:
[1] - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria.
J- Analyte present, value may or may not be accurate or precise
µg/l - micrograms per liter
*See Table 5-1 for references of "Other Applicable Federal Criteria"
NC2B-SW - North Carolina Administrative Code Title 15A, Subchapter 2B, Classifications and Water Quality Standards

N

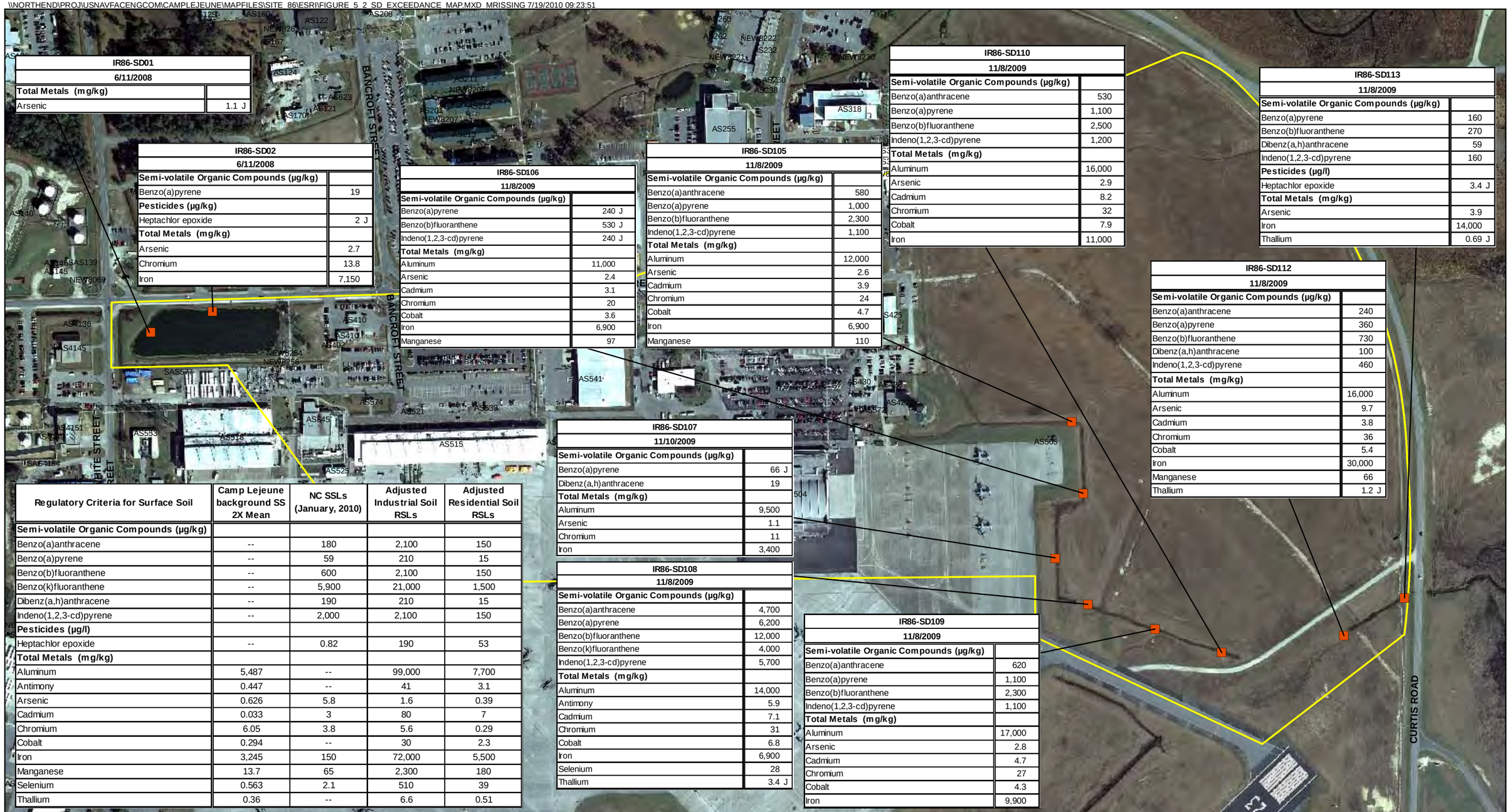
0 175 350 700 Feet

1 inch = 350 feet

Figure 5-1
Surface Water Exceedances
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT



IR86-SD01	
6/11/2008	
Total Metals (mg/kg)	
Arsenic	1.1 J

IR86-SD02	
6/11/2008	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	19
Pesticides (µg/kg)	
Heptachlor epoxide	2 J
Total Metals (mg/kg)	
Arsenic	2.7
Chromium	13.8
Iron	7,150

IR86-SD106	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	240 J
Benzo(b)fluoranthene	530 J
Indeno(1,2,3-cd)pyrene	240 J
Total Metals (mg/kg)	
Aluminum	11,000
Arsenic	2.4
Cadmium	3.1
Chromium	20
Cobalt	3.6
Iron	6,900
Manganese	97

IR86-SD105	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	580
Benzo(a)pyrene	1,000
Benzo(b)fluoranthene	2,300
Indeno(1,2,3-cd)pyrene	1,100
Total Metals (mg/kg)	
Aluminum	12,000
Arsenic	2.6
Cadmium	3.9
Chromium	24
Cobalt	4.7
Iron	6,900
Manganese	110

IR86-SD110	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	530
Benzo(a)pyrene	1,100
Benzo(b)fluoranthene	2,500
Indeno(1,2,3-cd)pyrene	1,200
Total Metals (mg/kg)	
Aluminum	16,000
Arsenic	2.9
Cadmium	8.2
Chromium	32
Cobalt	7.9
Iron	11,000

IR86-SD113	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	160
Benzo(b)fluoranthene	270
Dibenz(a,h)anthracene	59
Indeno(1,2,3-cd)pyrene	160
Pesticides (µg/l)	
Heptachlor epoxide	3.4 J
Total Metals (mg/kg)	
Arsenic	3.9
Iron	14,000
Thallium	0.69 J

IR86-SD112	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	240
Benzo(a)pyrene	360
Benzo(b)fluoranthene	730
Dibenz(a,h)anthracene	100
Indeno(1,2,3-cd)pyrene	460
Total Metals (mg/kg)	
Aluminum	16,000
Arsenic	9.7
Cadmium	3.8
Chromium	36
Cobalt	5.4
Iron	30,000
Manganese	66
Thallium	1.2 J

IR86-SD107	
11/10/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	66 J
Dibenz(a,h)anthracene	19
Total Metals (mg/kg)	
Aluminum	9,500
Arsenic	1.1
Chromium	11
Iron	3,400

IR86-SD108	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	4,700
Benzo(a)pyrene	6,200
Benzo(b)fluoranthene	12,000
Benzo(k)fluoranthene	4,000
Indeno(1,2,3-cd)pyrene	5,700
Total Metals (mg/kg)	
Aluminum	14,000
Antimony	5.9
Cadmium	7.1
Chromium	31
Cobalt	6.8
Iron	6,900
Selenium	28
Thallium	3.4 J

IR86-SD109	
11/8/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	620
Benzo(a)pyrene	1,100
Benzo(b)fluoranthene	2,300
Indeno(1,2,3-cd)pyrene	1,100
Total Metals (mg/kg)	
Aluminum	17,000
Arsenic	2.8
Cadmium	4.7
Chromium	27
Cobalt	4.3
Iron	9,900

Regulatory Criteria for Surface Soil	Camp Lejeune background SS 2X Mean	NC SSLs (January, 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Semi-volatile Organic Compounds (µg/kg)				
Benzo(a)anthracene	--	180	2,100	150
Benzo(a)pyrene	--	59	210	15
Benzo(b)fluoranthene	--	600	2,100	150
Benzo(k)fluoranthene	--	5,900	21,000	1,500
Dibenz(a,h)anthracene	--	190	210	15
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150
Pesticides (µg/l)				
Heptachlor epoxide	--	0.82	190	53
Total Metals (mg/kg)				
Aluminum	5,487	--	99,000	7,700
Antimony	0.447	--	41	3.1
Arsenic	0.626	5.8	1.6	0.39
Cadmium	0.033	3	80	7
Chromium	6.05	3.8	5.6	0.29
Cobalt	0.294	--	30	2.3
Iron	3,245	150	72,000	5,500
Manganese	13.7	65	2,300	180
Selenium	0.563	2.1	510	39
Thallium	0.36	--	6.6	0.51

Legend

- Sediment Sampling Location
- March 2010 Site 86 Boundary

Notes:
J- Analyte present, value may or may not be accurate or precise
mg/kg - milligrams per kilogram
µg/kg -micrograms per kilogram
NC SSLs – NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
RSLs - USEPA Regional Screening Levels

N

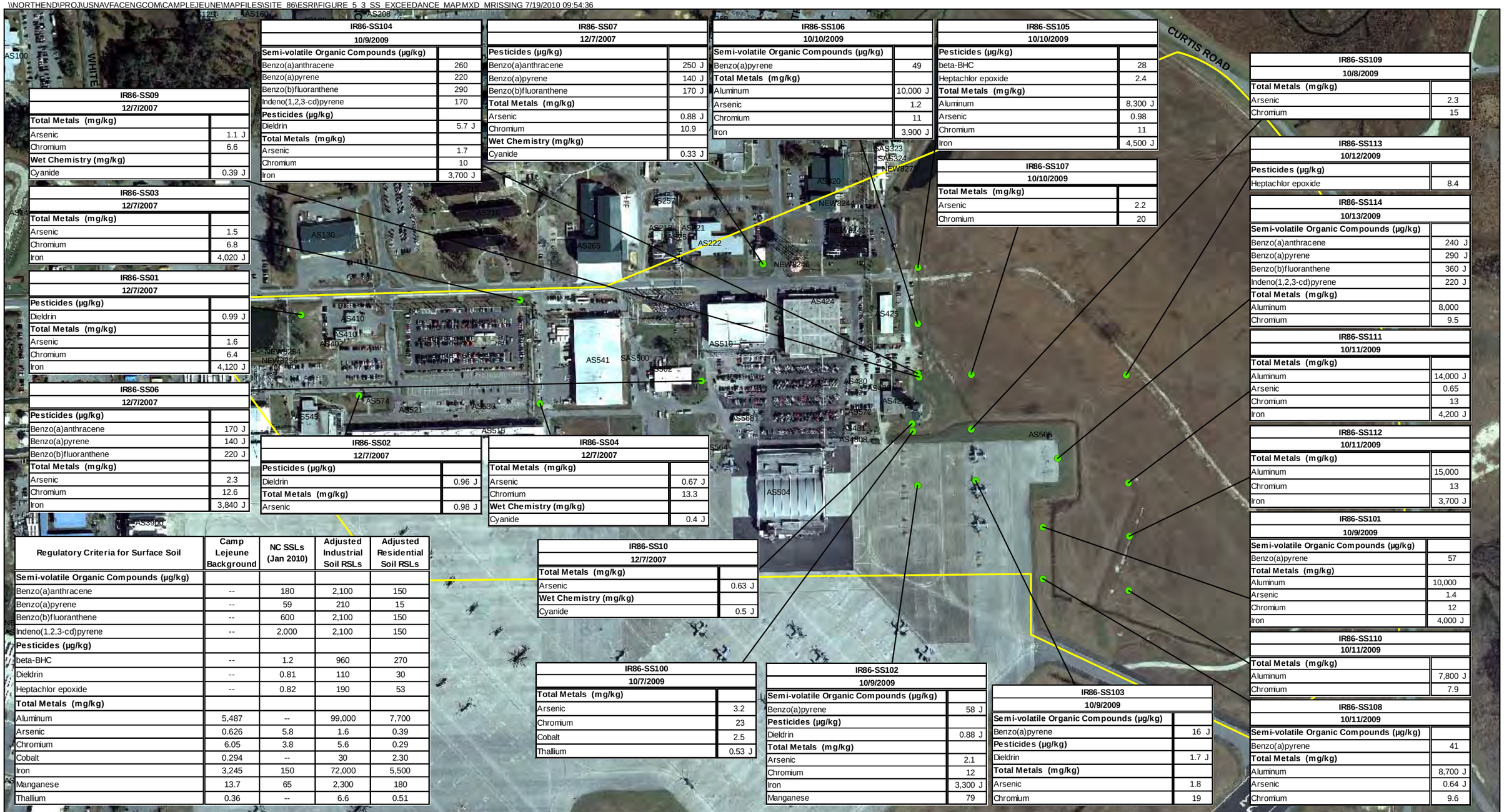
0 175 350 700 Feet

1 inch = 350 feet

Figure 5-2
Sediment Exceedances
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT



IR86-SS09	
12/7/2007	
Total Metals (mg/kg)	
Arsenic	1.1 J
Chromium	6.6
Wet Chemistry (mg/kg)	
Cyanide	0.39 J

IR86-SS03	
12/7/2007	
Total Metals (mg/kg)	
Arsenic	1.5
Chromium	6.8
Iron	4,020 J

IR86-SS01	
12/7/2007	
Pesticides (µg/kg)	
Dieldrin	0.99 J
Total Metals (mg/kg)	
Arsenic	1.6
Chromium	6.4
Iron	4,120 J

IR86-SS06	
12/7/2007	
Pesticides (µg/kg)	
Benzo(a)anthracene	170 J
Benzo(a)pyrene	140 J
Benzo(b)fluoranthene	220 J
Total Metals (mg/kg)	
Arsenic	2.3
Chromium	12.6
Iron	3,840 J

IR86-SS104	
10/9/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	260
Benzo(a)pyrene	220
Benzo(b)fluoranthene	290
Indeno(1,2,3-cd)pyrene	170
Pesticides (µg/kg)	
Dieldrin	5.7 J
Total Metals (mg/kg)	
Arsenic	1.7
Chromium	10
Iron	3,700 J

IR86-SS07	
12/7/2007	
Pesticides (µg/kg)	
Benzo(a)anthracene	250 J
Benzo(a)pyrene	140 J
Benzo(b)fluoranthene	170 J
Total Metals (mg/kg)	
Arsenic	0.88 J
Chromium	10.9
Wet Chemistry (mg/kg)	
Cyanide	0.33 J

IR86-SS106	
10/10/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	49
Total Metals (mg/kg)	
Aluminum	10,000 J
Arsenic	1.2
Chromium	11
Iron	3,900 J

IR86-SS105	
10/10/2009	
Pesticides (µg/kg)	
beta-BHC	28
Heptachlor epoxide	2.4
Total Metals (mg/kg)	
Aluminum	8,300 J
Arsenic	0.98
Chromium	11
Iron	4,500 J

IR86-SS107	
10/10/2009	
Total Metals (mg/kg)	
Arsenic	2.2
Chromium	20

IR86-SS109	
10/8/2009	
Total Metals (mg/kg)	
Arsenic	2.3
Chromium	15

IR86-SS113	
10/12/2009	
Pesticides (µg/kg)	
Heptachlor epoxide	8.4

IR86-SS114	
10/13/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)anthracene	240 J
Benzo(a)pyrene	290 J
Benzo(b)fluoranthene	360 J
Indeno(1,2,3-cd)pyrene	220 J
Total Metals (mg/kg)	
Aluminum	8,000
Chromium	9.5

IR86-SS111	
10/11/2009	
Total Metals (mg/kg)	
Aluminum	14,000 J
Arsenic	0.65
Chromium	13
Iron	4,200 J

IR86-SS112	
10/11/2009	
Total Metals (mg/kg)	
Aluminum	15,000
Chromium	13
Iron	3,700 J

IR86-SS101	
10/9/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	57
Total Metals (mg/kg)	
Aluminum	10,000
Arsenic	1.4
Chromium	12
Iron	4,000 J

IR86-SS110	
10/11/2009	
Total Metals (mg/kg)	
Aluminum	7,800 J
Chromium	7.9

IR86-SS108	
10/11/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	41
Total Metals (mg/kg)	
Aluminum	8,700 J
Arsenic	0.64 J
Chromium	9.6

IR86-SS02	
12/7/2007	
Pesticides (µg/kg)	
Dieldrin	0.96 J
Total Metals (mg/kg)	
Arsenic	0.98 J

IR86-SS04	
12/7/2007	
Total Metals (mg/kg)	
Arsenic	0.67 J
Chromium	13.3
Wet Chemistry (mg/kg)	
Cyanide	0.4 J

IR86-SS10	
12/7/2007	
Total Metals (mg/kg)	
Arsenic	0.63 J
Wet Chemistry (mg/kg)	
Cyanide	0.5 J

IR86-SS100	
10/7/2009	
Total Metals (mg/kg)	
Arsenic	3.2
Chromium	23
Cobalt	2.5
Thallium	0.53 J

IR86-SS102	
10/9/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	58 J
Pesticides (µg/kg)	
Dieldrin	0.88 J
Total Metals (mg/kg)	
Arsenic	2.1
Chromium	12
Iron	3,300 J
Manganese	79

IR86-SS103	
10/9/2009	
Semi-volatile Organic Compounds (µg/kg)	
Benzo(a)pyrene	16 J
Pesticides (µg/kg)	
Dieldrin	1.7 J
Total Metals (mg/kg)	
Arsenic	1.8
Chromium	19

Regulatory Criteria for Surface Soil	Camp Lejeune Background	NC SSLs (Jan 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Semi-volatile Organic Compounds (µg/kg)				
Benzo(a)anthracene	--	180	2,100	150
Benzo(a)pyrene	--	59	210	15
Benzo(b)fluoranthene	--	600	2,100	150
Indeno(1,2,3-cd)pyrene	--	2,000	2,100	150
Pesticides (µg/kg)				
beta-BHC	--	1.2	960	270
Dieldrin	--	0.81	110	30
Heptachlor epoxide	--	0.82	190	53
Total Metals (mg/kg)				
Aluminum	5,487	--	99,000	7,700
Arsenic	0.626	5.8	1.6	0.39
Chromium	6.05	3.8	5.6	0.29
Cobalt	0.294	--	30	2.30
Iron	3,245	150	72,000	5,500
Manganese	13.7	65	2,300	180
Thallium	0.36	--	6.6	0.51

Legend

- Surface Soil Sampling Location
- March 2010 Site 86 Boundary

Notes:
J- Analyte present, value may or may not be accurate or precise
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
NC SSLs – NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
RSLs - USEPA Regional Screening Levels
beta-BHC – beta-Benzenehexachloride

N

0 175 350 700 Feet

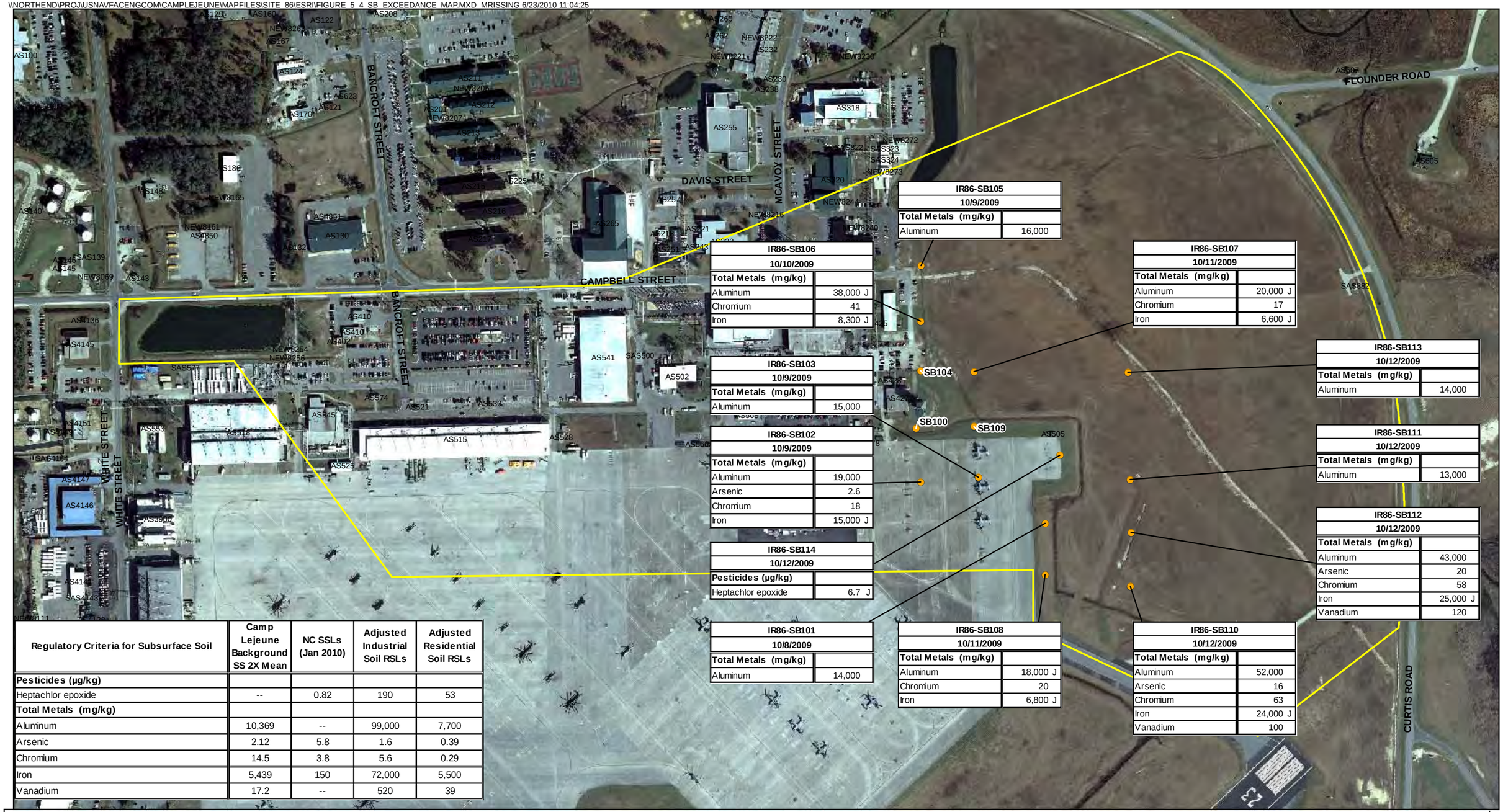
1 inch = 350 feet

Figure 5-3
Surface Soil Exceedances
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Ramsey/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_4_SB_EXCEEDANCE_MAP.MXD MRISSING 6/23/2010 11:04:25



Regulatory Criteria for Subsurface Soil	Camp Lejeune Background SS 2X Mean	NC SSLs (Jan 2010)	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Pesticides (µg/kg)				
Heptachlor epoxide	--	0.82	190	53
Total Metals (mg/kg)				
Aluminum	10,369	--	99,000	7,700
Arsenic	2.12	5.8	1.6	0.39
Chromium	14.5	3.8	5.6	0.29
Iron	5,439	150	72,000	5,500
Vanadium	17.2	--	520	39

Legend

- Subsurface Soil Sampling Location
- March 2010 Site 86 Boundary

Notes:
J- Analyte present, value may or may not be accurate or precise
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
NC SSLs – NC Department of Environment and Natural Resources' Federal Remediation Branch Soil Screening Levels
RSLs - USEPA Regional Screening Levels

N

0 175 350 700 Feet

1 inch = 350 feet

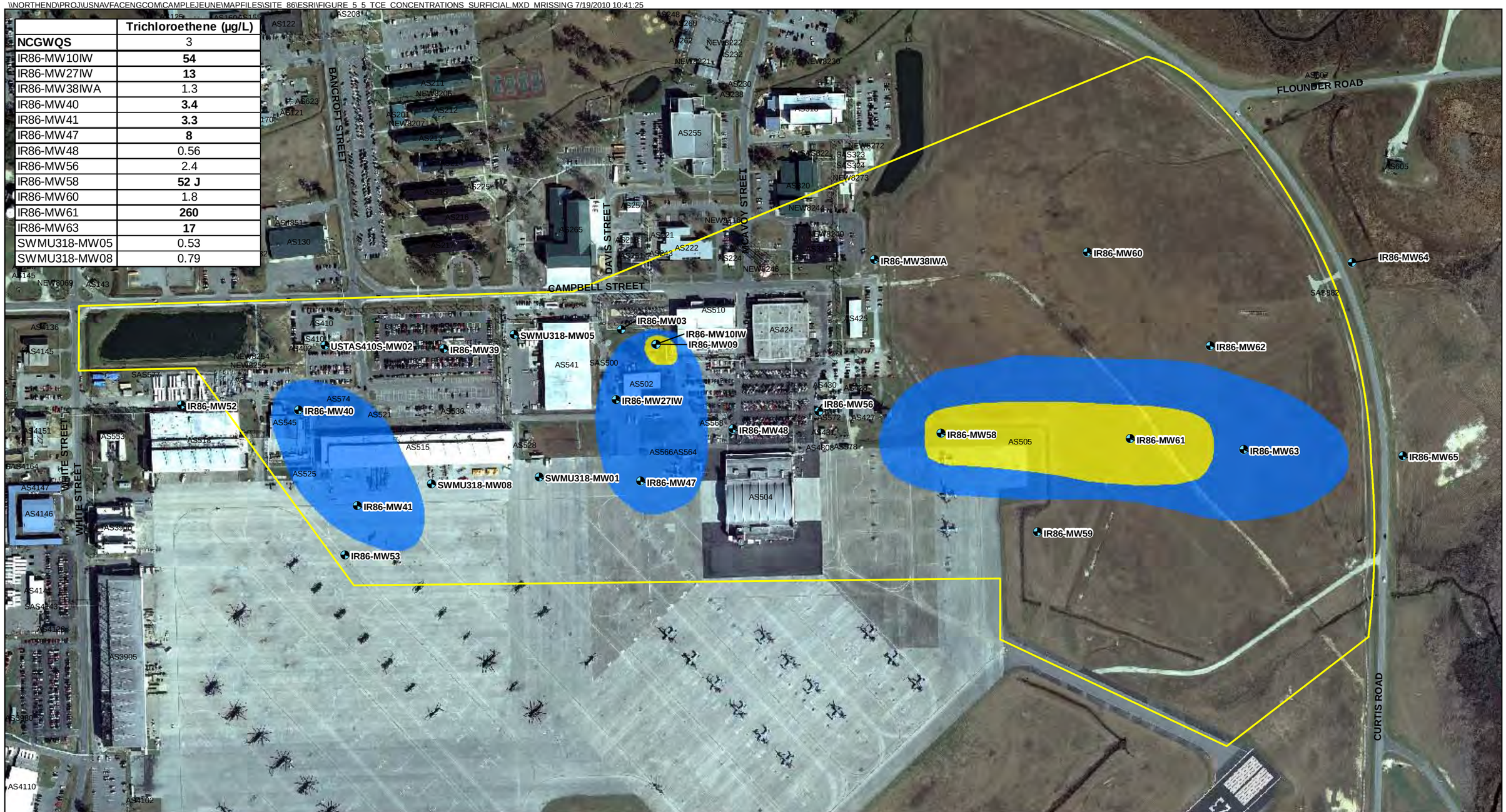
Figure 5-4
Subsurface Soil Exceedances
Expanded Supplemental Remedial Investigation
Operable Unit No. 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Ramsey/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_5_TCE_CONCENTRATIONS_SURFICIAL.MXD MRISSING 7/19/2010 10:41:25

	Trichloroethene (µg/L)
NCGWQS	3
IR86-MW10IW	**54**
IR86-MW27IW	**13**
IR86-MW38IWA	1.3
IR86-MW40	**3.4**
IR86-MW41	**3.3**
IR86-MW47	**8**
IR86-MW48	0.56
IR86-MW56	2.4
IR86-MW58	**52 J**
IR86-MW60	1.8
IR86-MW61	**260**
IR86-MW63	**17**
SWMU318-MW05	0.53
SWMU318-MW08	0.79



Legend
- Surficial Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

TCE Concentrations
- > 30 µg/L
- > 3.0 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, January 2010 and March 2010.
- NCGWQS for TCE = 3.0 µg/L.
- Only detected concentrations of TCE shown in table.
- **Bold** indicates value above NCGWQS.

J- Analyte present, value may or may not be accurate or precise.

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 5-5
TCE Concentrations in the Surficial Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_6_SURFICIAL_GW_CIS_1_2_DCE_CONCENTRATIONS.MXD MRISSING 7/19/2010 10:50:19

	cis-1,2-Dichloroethene (µg/L)
NCGWQS	70
IR86-MW10IW	37
IR86-MW27IW	15
IR86-MW38IWA	0.57 J
IR86-MW40	1.6
IR86-MW41	4.2
IR86-MW47	0.7 J
IR86-MW48	1.5
IR86-MW52	0.22 J
IR86-MW56	28
IR86-MW58	**150 J**
IR86-MW60	9.9
IR86-MW61	**79**
IR86-MW63	12
SWMU318-MW01	0.24 J
SWMU318-MW05	0.83 J
SWMU318-MW08	1.5

Legend

- Surficial Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

cis 1,2-DCE Concentrations

- > 70 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, January 2010 and March 2010.
- NCGWQS for cis-1,2-DCE = 70 µg/L.
- Only detected concentrations of cis-1,2-DCE shown in table.
- **Bold** indicates value above NCGWQS.
- J- Analyte present, value may or may not be accurate or precise.

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 5-6
cis 1,2-DCE Concentrations in the Surficial Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_7_SURFICIAL_GW_VC_CONCENTRATIONS.MXD MRISSING 7/19/2010 10:58:46

	Vinyl Chloride (µg/L)
NCGWQS	0.03
IR86-MW10IW	**19**
IR86-MW27IW	**1.1**
IR86-MW58	**68 J**

Legend

- Surficial Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

VC Concentrations

- > 50 µg/L
- > 5.0 µg/L
- > 0.5 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, January 2010 and March 2010.
- NCGWQS for VC = 0.03 µg/L.
- Only detected concentrations of VC shown in table.
- **Bold** indicates value above NCGWQS.
- J- Analyte present, value may or may not be accurate or precise.

N

0 175 350 700 Feet

1 inch = 350 feet

Figure 5-7
VC Concentrations in the Surficial Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_8_UPPER_CASTLE_HAYNE_GW_TCE_CONCENTRATIONS.MXD MARTESE 6/30/2010 09:27:43

	Trichloroethene (µg/L)
NCGWQS	3
IR86-MW16IW	**3.8**
IR86-MW29IW	**140**
IR86-MW30IW	1.1
IR86-MW31IW	**7.7 J**
IR86-MW34IW	**3.5**
IR86-MW38IWB	2.7
IR86-MW38IWC	**3.1**
IR86-MW42IW	**330**
IR86-MW44IW	**110 J**
IR86-MW54IW	**260**
IR86-MW55IW	0.28 J
IR86-MW58IW	**710**
IR86-MW61IW	1.2

Legend

- Upper Castle Hayne Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

TCE Concentrations

- > 300 µg/L
- > 30 µg/L
- > 3.0 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, March 2010, and June 2010.
- NCGWQS for TCE = 3.0 µg/L.
- Only detected concentrations of TCE shown in table.
- **Bold** indicates value above NCGWQS.
- J- Analyte present, value may or may not be accurate or precise.

N

0 175 350 700 Feet

1 inch = 350 feet

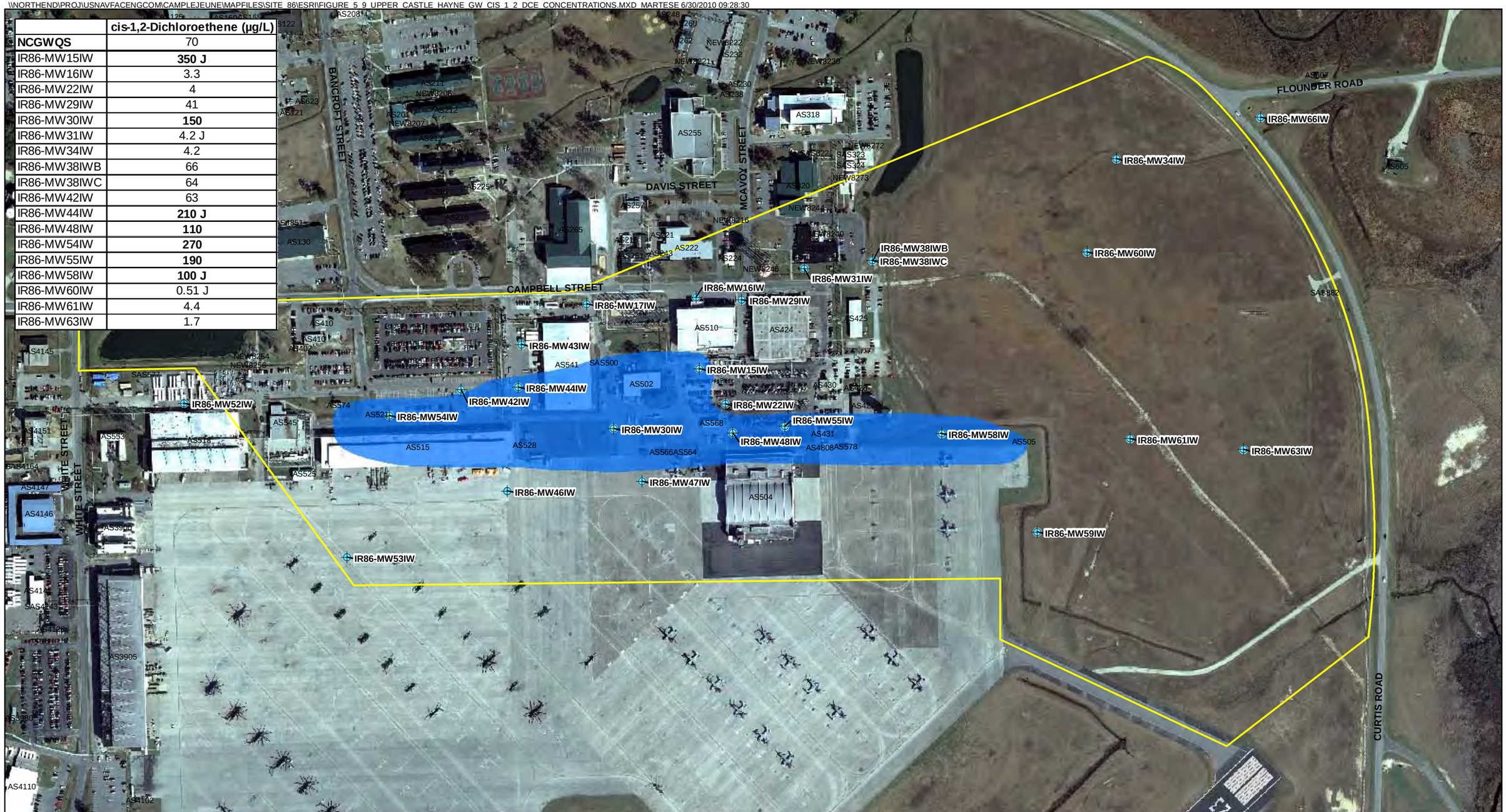
Figure 5-8
TCE Concentrations in the Upper Castle Hayne Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\FIGURE_5_9_UPPER_CASTLE_HAYNE_GW_CIS_1_2_DCE_CONCENTRATIONS.MXD MARTESE 6/30/2010 09:28:30

	cis-1,2-Dichloroethene (µg/L)
NCGWQS	70
IR86-MW15IW	**350 J**
IR86-MW16IW	3.3
IR86-MW22IW	4
IR86-MW29IW	41
IR86-MW30IW	**150**
IR86-MW31IW	4.2 J
IR86-MW34IW	4.2
IR86-MW38IWB	66
IR86-MW38IWC	64
IR86-MW42IW	63
IR86-MW44IW	**210 J**
IR86-MW48IW	**110**
IR86-MW54IW	**270**
IR86-MW55IW	**190**
IR86-MW58IW	**100 J**
IR86-MW60IW	0.51 J
IR86-MW61IW	4.4
IR86-MW63IW	1.7



Legend

- Upper Castle Hayne Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

cis 1,2-DCE Concentrations

- > 70 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, March 2010, and June 2010.
- NCGWQS for cis-1,2-DCE = 70 µg/L.
- Only detected concentrations of cis-1,2-DCE shown in table.
- **Bold** indicates value above NCGWQS.
- J- Analyte present, value may or may not be accurate or precise.

N

0 175 350 700 Feet

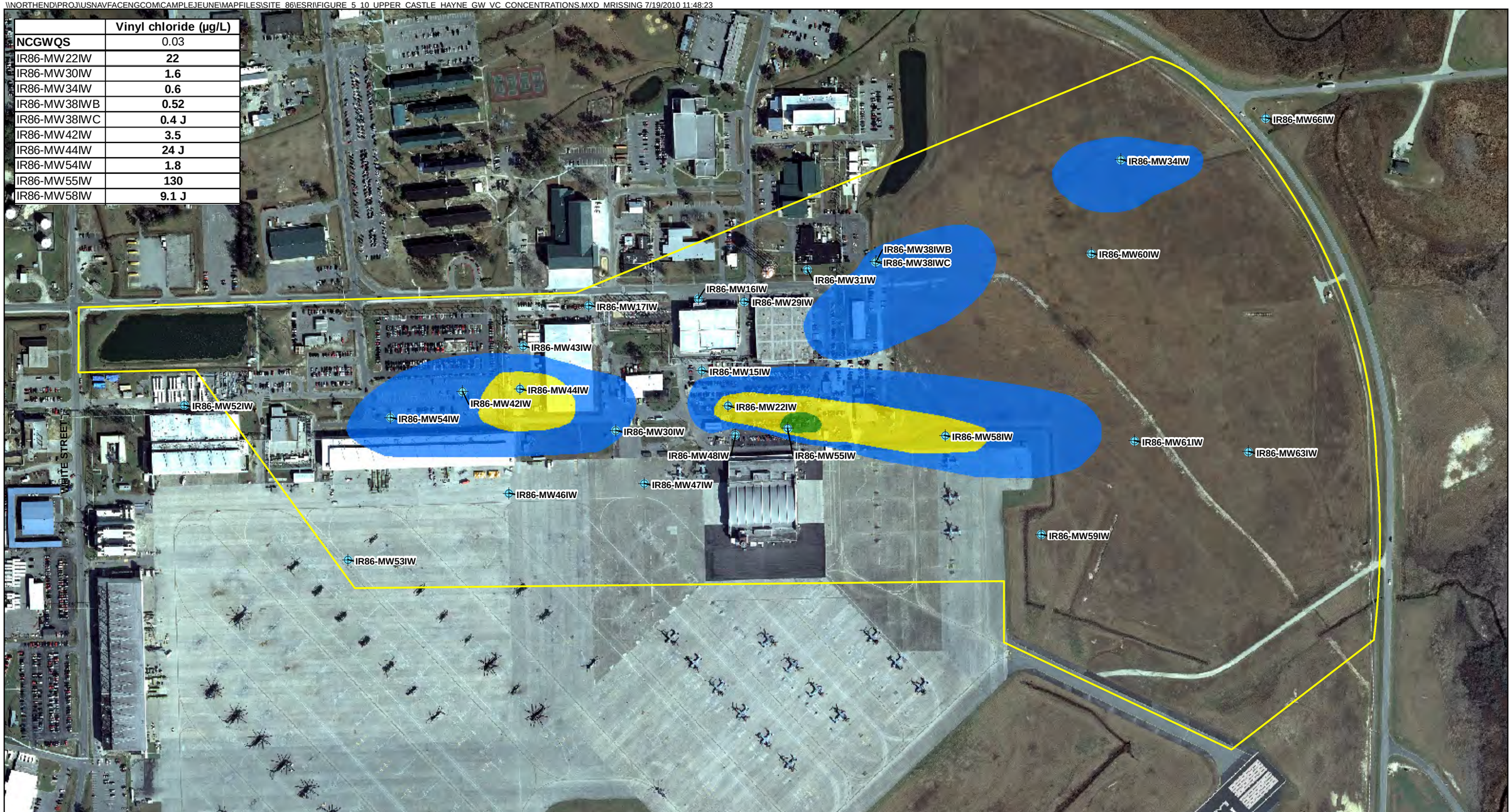
1 inch = 350 feet

Figure 5-9
cis 1,2-DCE Concentrations in the Upper Castle Hayne Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

	Vinyl chloride (µg/L)
NCGWQS	0.03
IR86-MW22IW	**22**
IR86-MW30IW	**1.6**
IR86-MW34IW	**0.6**
IR86-MW38IWB	**0.52**
IR86-MW38IWC	**0.4 J**
IR86-MW42IW	**3.5**
IR86-MW44IW	**24 J**
IR86-MW54IW	**1.8**
IR86-MW55IW	**130**
IR86-MW58IW	**9.1 J**



Legend

- Upper Castle Hayne Aquifer Monitoring Well
- Expanded Site 86 Boundary (March 2010)

VC Concentrations

- > 50 µg/L
- > 5.0 µg/L
- > 0.5 µg/L

Notes:
- All concentrations are reported in µg/L.
- Contours have been interpolated between monitoring well locations. Actual conditions may differ from those shown.
- Samples collected in December 2009, January 2010 and March 2010.
- NCGWQS for VC = 0.03 µg/L.
- Only detected concentrations of VC shown in table.
- **Bold** indicates value above NCGWQS.
- J- Analyte present, value may or may not be accurate or precise.

N

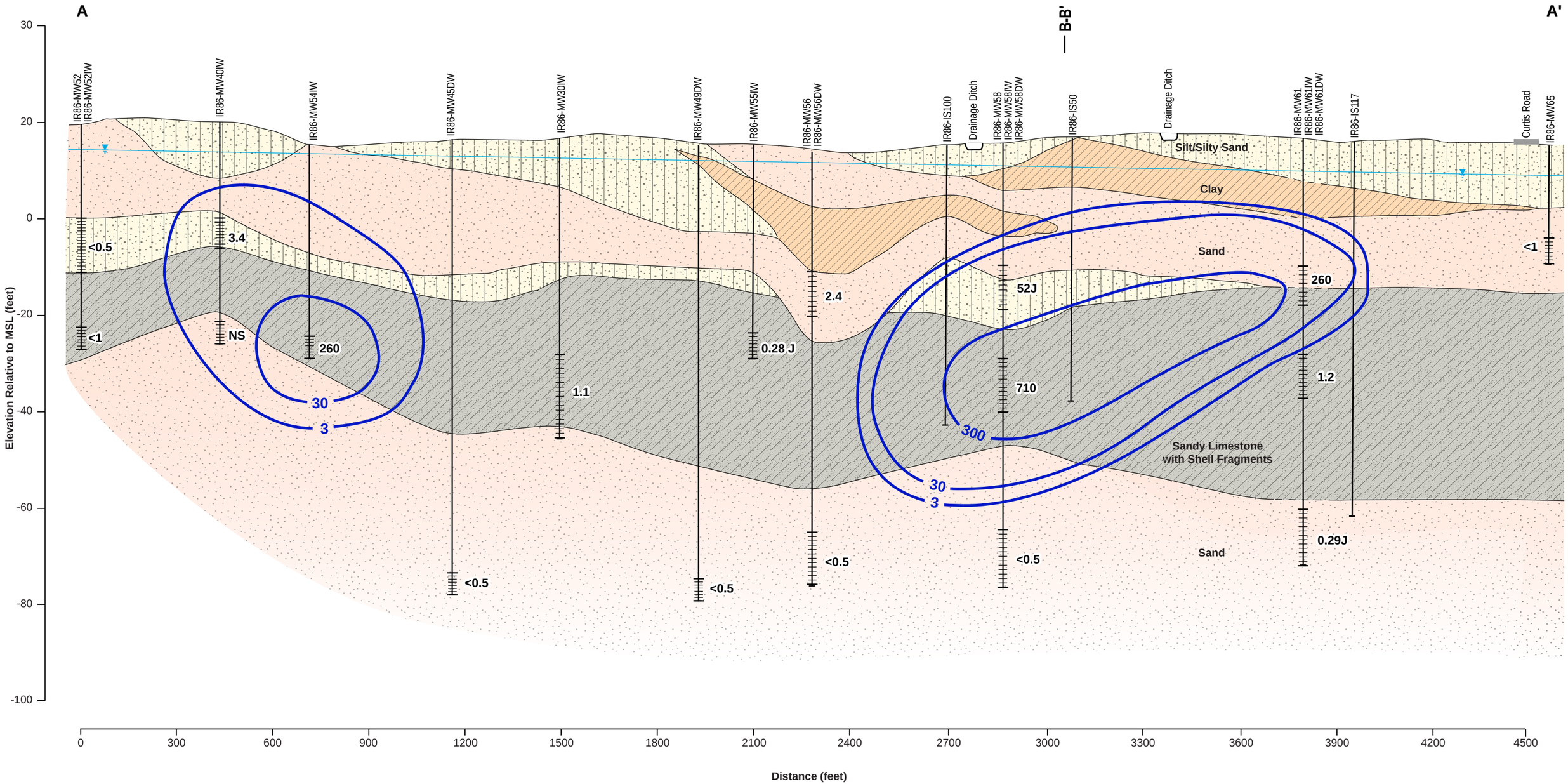
0 175 350 700 Feet

1 inch = 350 feet

Figure 5-10
VC Concentrations in the Upper Castle Hayne Aquifer
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB Cam Lej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT



LEGEND

Silt/Silty Sand	Screened interval
Clay	Soil boring
Sand	Water table
Partially to completely cemented sandy limestone with shell fragments	3 TCE Isoconcentration Contour (µg/L)
	260 TCE Concentration (µg/L)

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

Notes:

1) The depth and thickness of the subsurface strata indicated on this section (profile) were generalized from and interpolated between test locations. Subsurface conditions occurring at other locations may differ from conditions occurring at indicated locations.

2) IR86-MW61/61IW/61DW boring log not available.

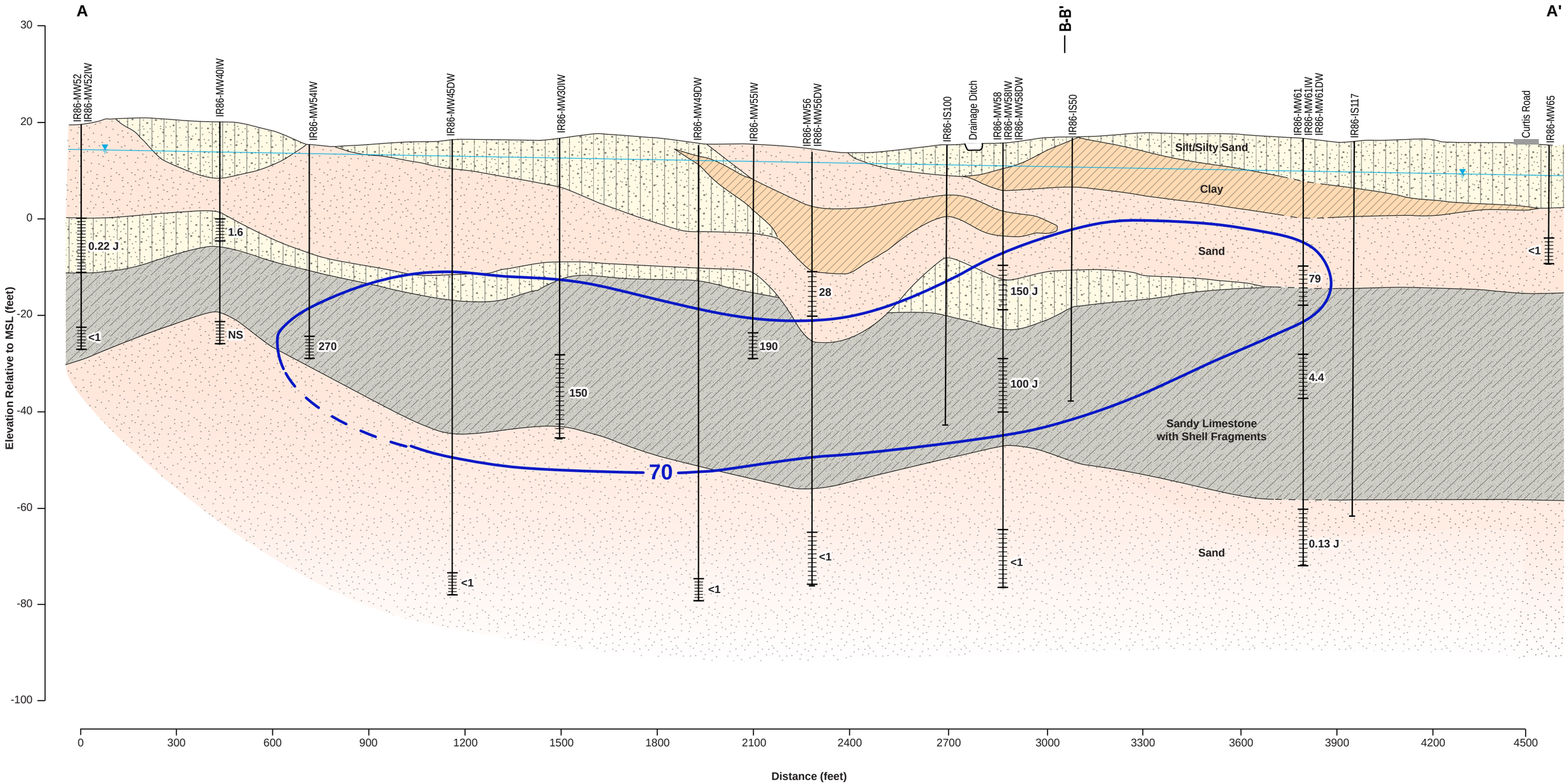
3) J – Analyte present, value may or may not be accurate or precise.

Figure 5-11
Cross Sectional View of TCE Distribution (A-A')
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: J. Albano/CLT Checked by: K. Howell/CLT

ES051410163354MKE



LEGEND

- Silt/Silty Sand
- Clay
- Sand
- Partially to completely cemented sandy limestone with shell fragments
- Screened interval
- Soil boring
- Water table
- 70 cis-1,2-DCE Isoconcentration Contour (µg/L)
- 190 cis-1,2-DCE Concentration Contour (µg/L)

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

Notes

1) The depth and thickness of the subsurface strata indicated on this section (profile) were generalized from and interpolated between test locations. Subsurface conditions occurring at the other locations may differ from conditions occurring at indicated locations.

2) IR86-MW61/61IW/61DW boring log not available.

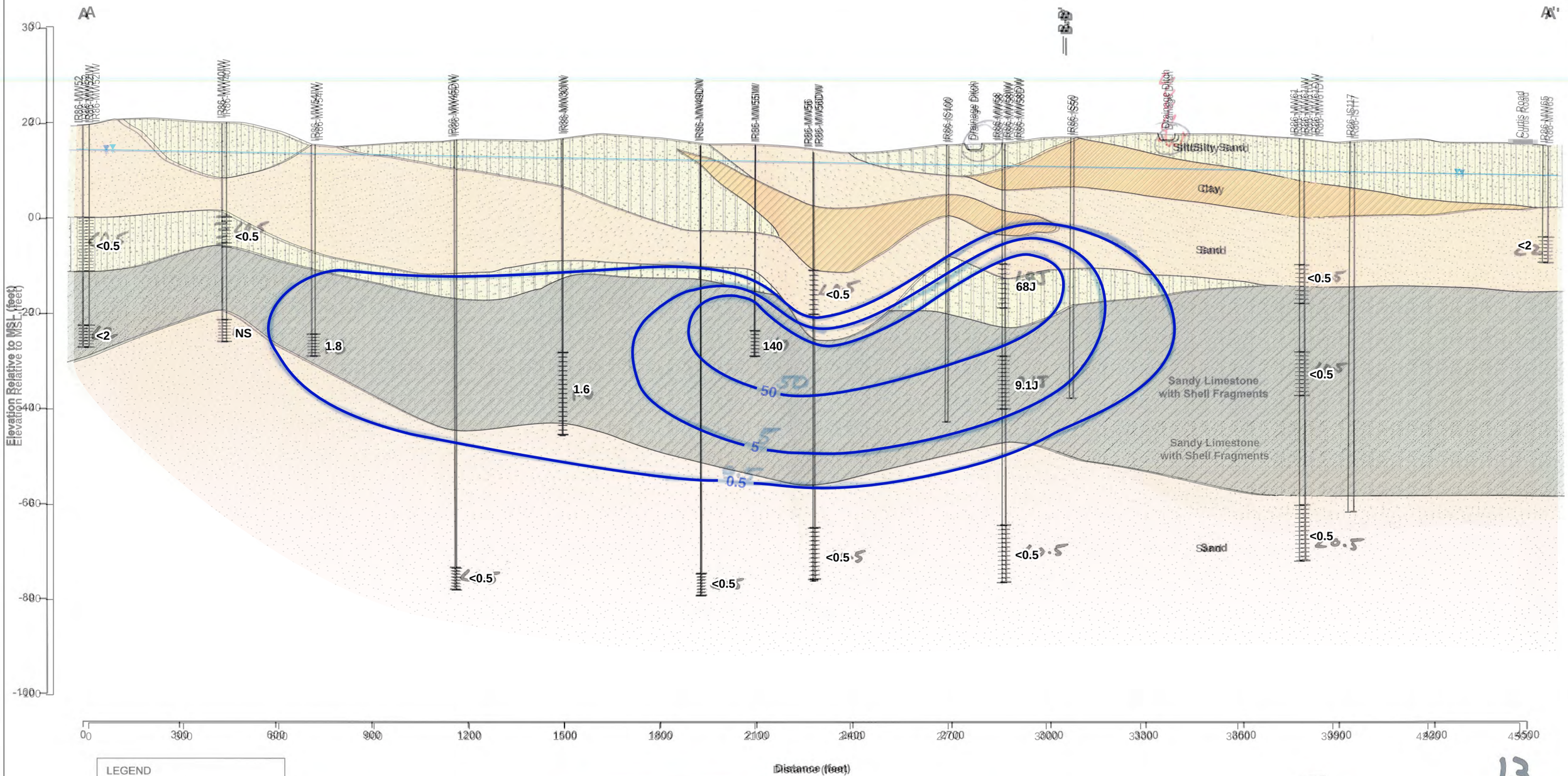
3) **PPT locations IR86-IS100, IR86-IS50, and IR86-IS117 are lithologic purposes only.

Figure 5-12
Cross Sectional View of cis-1,2-Dichloroethene A-A'
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: J. Albano/CLT Checked by: K. Howell/CLT

ES051410163354MKE



LEGEND

- Silt/Silty Sand
- Clay
- Sand
- Clay
- Partially to completely cemented sandy limestone with shell fragments
- Partially to completely cemented sandy limestone with shell fragments
- Soil boring
- Generalized potentiometric surface of the Surficial Aquifer
- Screened interval
- Soil boring
- Water table
- Screened interval
- 5 VC Isoconcentration Contour (µg/L)
- 140 VC Concentration (µg/L)

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

Horizontal : 1" = 300'
Vertical: 1" = 20'
V.E. = 15x

>0.5 — VC Isoconcentration contour

140 — VC concentration (µg/L)

Notes:

1) The depth and thickness of the subsurface strata indicated on this section (profile) were generalized from and interpolated between test locations. Subsurface conditions occurring at other locations may differ from conditions occurring at indicated locations.

2) IR86-MW61/61IW/61DW boring log not available.

3) J – Analyte present, value may or may not be accurate or precise.

See notes from 5-11

Figure 5-13

Gross Sectional View of VC Distribution (A-A')

Figure 5-13
Cross Sectional View of VC Distribution (A-A')
Geologic Cross Section A
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

Created by: Jeff Albano /JAL Checked by: Kevin Howell /KLH

CH2MHILL

ES051410163354MKE Camp Lejeune Site86 Figure 4-3 A-A' v4.ai 06.24.10 sls
Generated by: J. Albano/JAL Checked by: K. Howell/KLH

SECTION 6

Contaminant Fate and Transport

The fate and transport of contaminants in soil and groundwater at Site 86 are discussed in this section, including contaminant mobility and persistence, physical and chemical properties, and physical and hydraulic properties of the aquifers. This section includes a comparison of predicted attenuation conditions to observed contaminant migration and attenuation characteristics.

6.1 Contaminant Mobility and Persistence

The probable behavior of contaminants is determined by their physical, chemical, and biological interaction with the environment. Mobility and persistence are two key factors in determining probable behavior. Mobility is the potential for a chemical to migrate from a source, and persistence is the measure of how long a chemical will remain in the environment. When considering mobility and persistence, it is important to understand their role in evaluating the extent of natural attenuation that may be occurring at the site.

Natural attenuation is defined as "the biodegradation, dispersion, dilution, sorption, volatilization, and/or chemical and biological stabilization of contaminants to effectively reduce contaminant toxicity, mobility, or volume to levels that are protective of human health" (USEPA, 1999).

6.1.1 Contaminant Groups

VOCs, SVOCs, pesticides, and metals have been detected in the soil, sediment, surface water, and groundwater at Site 86. The nature and extent of these constituents are discussed in Section 5, which indicates that the most prevalent site-related constituents are VOCs in groundwater, SVOCs in sediment, soil, and surface water, and metals in groundwater, sediment, soil, and surface water.

The primary constituents identified in groundwater at Site 86 are TCE, cis-1,2-DCE, and VC based on the concentration, frequency of detection and widespread distribution.

Additional VOCs including benzene, PCE, MTBE, and 1,1-DCE; the SVOCs benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and the metals chromium and iron were detected at concentrations exceeding the applicable NCGWQS. Based on the relatively low concentration of the detections relative to the NCGWQS, low frequency of detection or limited distribution, these constituents are considered secondary COCs.

The fate and transport of these constituents are discussed in the following sections.

6.1.2 Physical and Chemical Properties of Representative Compounds

The following physical and chemical properties are considered to be the most important when evaluating the transport of contaminants at Site 86:

- Sorption
- Volatilization
- Degradation
- Bioaccumulation
- Non-aqueous phase liquids

The following profiles describe how chemical and physical properties (e.g., water solubility, specific gravity) of the contaminants affect their mobility and persistence. **Table 6-1** summarizes the relevant physical and chemical properties of the contaminants. **Table 5-2** summarizes the water quality parameters (pH, specific conductance, temperature, DO, ORP, and turbidity) recorded during the 2009/2010 groundwater monitoring event.

Sorption

Sorption is the tendency for chemicals to adsorb to and desorb from the media through which they are being transported. The subsurface materials to which site-related contaminants are most likely to adsorb are clays and organic material. As noted in Section 4, the geological formations present at Site 86 consist predominantly of silts, sandy silts, and limestone, with variable amounts of sandy clay and clay.

The conventional measure of sorption is the distribution coefficient (K_d) of soil and geologic material for a given chemical. The K_d for organic chemicals is the product of a partition coefficient (K_{oc}) of the chemical and the fraction of organic carbon (F_{oc}) in the soil. In general, chemicals with a K_d greater than 10,000 milliliters per gram (ml/g), or a log K_{oc} greater than 5 have high degrees of adsorption and low mobility. This is characteristic of the SVOCs, pesticides, and metals detected in the sediment, soil, and surface water at Site 86; thus, these constituents have a higher tendency to adsorb to the subsurface material, which would limit their mobility in the environment. Additionally, the low mobility of these constituents indicates that leaching from soil to groundwater is unlikely.

Chemicals with a K_d less than 1,000 ml/g, or a log K_{oc} less than 3 ml/g have lower degrees of adsorption and higher mobility potential. This is characteristic of the VOCs detected in the groundwater at Site 86. For example, TCE and VC both have relatively low log K_{oc} values (2.10 ml/g and 0.60 ml/g, respectively), and thus a lower tendency for adsorption to the subsurface material, which enhances their mobility through the environment. All VOCs detected at the Site 86 have log K_{oc} values of less than 3 and are considered to have moderate to high mobility in soil, suggesting that they are likely to leach from soil to groundwater.

The migration rates of different dissolved contaminants vary depending on their tendency to adsorb to the site-specific aquifer matrix. Consequently, the rate of contaminant migration is generally lower than the groundwater seepage velocity, referred to as "retardation." For each contaminant detected at Site 86, it is possible to calculate theoretical retardation coefficients, which are estimates of how the migration of a contaminant is slowed by adsorption with respect to groundwater seepage velocity. Soil retardation coefficients for VOCs detected in the groundwater at Site 86 are presented in **Table 6-2**. The following is a brief explanation of the retardation coefficient equation:

$$R = 1 + p_b \, x \, K_d / n_e$$

where:

R = Retardation coefficient (dimensionless)
p_b = Bulk density (grams per cubic centimeter)
K_d = Distribution coefficient (ml/g)
n_e = Effective porosity (dimensionless)

The effect of retardation is estimated by dividing the groundwater flow velocity by R, which provides a value of migration that is either equal to the flow rate (in the case of no retardation) or less than the flow rate (in the presence of retardation).

Estimates of the rates of contaminant migration are approximate and the estimates of R have an even greater level of uncertainty than do the estimates of the rates of groundwater flow. Contaminant migration velocities can be approximated by modifying the Darcy Equation to utilize the available groundwater velocity data described in Section 4.3.2 and the chemical-specific properties presented in **Table 6-2.** The Darcy Equation can be used to calculate a groundwater velocity within a porous medium as shown in the following equation:

$$V_L = (K \times i)/n_e$$

where:

V_L = Linear groundwater seepage velocity [L/T]
K = Hydraulic conductivity [L/T]
i = Hydraulic gradient [dimensionless]
n_e = Effective porosity [dimensionless]

Contaminant migration velocity is the quotient of the linear groundwater velocity and the retardation factor as shown below:

$$V_{COC} = V_L/R$$

where:

V_{coc} = Velocity of the COC [L/T]
V_L = Linear groundwater velocity [L/T]
R = Retardation coefficient (dimensionless)

Approximate migration velocities for the COCs are listed in **Table 6-2**. Of the contaminants listed in the table, TCE will likely travel at the slowest rate due to the relatively high retardation coefficient and the chemical's affinity to sorb onto, or partition into, organic matter which may be coating the aquifer matrix. Because VC has a retardation coefficient of 1.0, it will likely migrate through the aquifer at the same velocity as groundwater.

Volatilization

Volatilization is the tendency for some chemicals, particularly VOCs, to change from a liquid or adsorbed state to a gas. A conventional measure of volatility is Henry's Law Constant (K_h). Values of K_h for the COCs are presented in **Table 6-1**. In general, compounds with K_h values greater than 10^{-3} atmosphere-cubic meter per mole (atm-m^3/M) are expected to volatilize readily from water to air. Compounds with K_h values less than 10^{-5} atm-m^3/M are generally stable and not expected to volatilize from water to air.

The dominant process for removing VOCs from shallow soil is volatilization into the atmosphere, characterized by their relatively high K_h values and vapor pressures. Thus, VOCs occur infrequently in shallow soil, and likely volatilize into soil gas overlying the water table. Inversely, the vapor pressure and K_h suggest that of the VOCs present at Site 86, 1,1-DCE will volatilize at the highest rate, followed by VC, cis-1,2-DCE, TCE, PCE, and benzene.

Degradation

Degradation is the transformation of one chemical to another either biotically (biodegradation) or abiotically through hydrolysis or photolysis. Biodegradation occurs when microorganisms convert one chemical to another as part of their respiration process. Hydrolysis is the reaction of a chemical with water, and photolysis is the result of exposing the chemical to light.

Degradation is commonly expressed as a half-life that accounts for whatever processes may be operating to break down the chemical. Estimates of half-lives for the COCs are presented in **Table 6-1**.

VOCs can undergo biodegradation through three separate pathways: reductive dechlorination, oxidation, or co-metabolism. The primary biodegradation process for TCE and cis-1,2-DCE is reductive dechlorination (USEPA, 1999). During this process, VOCs are used as electron acceptors based on the availability of an adequate supply of electron donors. Anthropogenic and natural organic carbon sources act as electron donors. During the biodegradation process, chlorine atoms are removed from the VOCs and replaced by hydrogen atoms, eventually resulting in the transformation of the VOC to an innocuous degradation byproduct such as carbon dioxide, ethane, ethane, or water (**Figure 6-1**).

The rate of reductive dechlorination appears to decrease as the degree of chlorination decreases. Therefore, TCE degradation rates are generally higher than those of cis-1,2-DCE and VC. The less chlorinated degradation byproducts have been documented to degrade as electron donors under aerobic conditions.

Concentrations of parent compounds, daughter products, and NAIPs are used to evaluate the extent to which biodegradation is occurring. Concentrations of daughter products and chloride ions that are greater than background levels, or that increase downgradient through the plume, indicate that some degree of reductive dechlorination is occurring. Low concentrations of NAIPs, including DO, nitrate, ferric iron (iron III oxide), sulfate, and carbon dioxide also suggest that reductive dechlorination is occurring. Elevated concentrations of TOC and dissolved hydrogen are also indicative of reductive dechlorination. Concentrations of ethane and ethene may indicate that complete dechlorination of VC is occurring.

In addition to reductive dechlorination, benzene, cis-1,2-DCE, and VC degrade aerobically. Elevated concentrations of carbon dioxide, DO, dissolved hydrogen, and alkalinity are indicators that oxidation of these chemicals may be occurring.

Bioaccumulation

Bioaccumulation is the process of chemicals adsorbing to and accumulating in plants and the organ tissue of animals. This process is expressed as the octanol-water partition

coefficient (K_{ow}), which is the ratio of the concentration of a chemical in octanol versus the concentration in water at equilibrium and a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter and is used to predict the fate of chemicals in the environment and a chemical's tendency to accumulate in biological material. In general, SVOCs tend to have higher K_{ow} values, whereas VOCs tend to have lower K_{ow} values.

At Site 86, VOCs that are more chlorinated, such as TCE, have slightly higher K_{ow} values and tend to bioaccumulate more readily than less chlorinated VOCs.

Non-aqueous Phase Liquids

Because of their low solubility, CVOCs, with the exception of VC, can occur in aquifers as dense non-aqueous phase liquids (DNAPLs) when present in the undissolved free phase form. They are referred to as "dense" because they are heavier than water when present in free phase form and sink through the aquifer. DNAPL slowly partitions (dissolves) into the surrounding groundwater at a rate and concentration dependent on the solubility of the compound, temperature, chemical characteristics of the groundwater, and other factors.

Dissolved concentrations of CVOCs in groundwater at approximately 1 to 5 percent of a compound's solubility would suggest the presence of DNAPL in the subsurface. The maximum concentrations of PCE, TCE, 1,1-DCE, cis-1,2-DCE, and VC during the 2009/2010 groundwater monitoring event were less than 1 percent of their respective solubilities, indicating that these VOCs are unlikely to be present in their non-aqueous phases.

Light non-aqueous phase liquids (LNAPLs) are typically associated with fuel hydrocarbon contamination. As with DNAPLs, LNAPLs slowly dissolve into the surrounding groundwater at a rate and concentration dependent on the solubility of the compound, temperature, chemical characteristics of the groundwater, and other factors. The maximum concentration of benzene, a VOC typically associated with fuel hydrocarbon contamination, detected in groundwater collected during the 2009/2010 groundwater monitoring event was less than 1 percent of its solubility in water. Thus, the presence of LNAPL at Site 86 is unlikely.

6.1.3 Physical Properties of the Aquifer

The following physical mechanisms are key factors in controlling the fate and transport of contaminants dissolved in groundwater during migration:

- Advection
- Dispersion

Advection is the transport of dissolved contaminants by the bulk motion of flowing groundwater. Advection controls the rate and direction of contaminant migration. The site-specific horizontal average linear seepage velocities for groundwater flow in the surficial aquifer and upper Castle Hayne Aquifer are 20.18 feet per year (ft/yr) and 24.28 ft/yr, respectively. A slight downward hydraulic gradient also exists at Site 86.

Dispersion is the distribution of dissolved contaminants along the path where they flow during advection. It is a result of the spatial variation in aquifer permeability, fluid mixing,

and molecular diffusion. Dispersion primarily controls the concentrations of the contaminants at any point in the flow system.

Dispersion occurs in moving groundwater because of local variations in flow velocities caused by the variability of the hydraulic conductivity of porous media. Typically, the degree of dispersion is greater in the direction of groundwater flow than in directions perpendicular to it. The concentrations in the center of the contaminant plume decrease as dispersion dilutes the contaminant mass. Migration of contaminants from the center of the mass varies based on the retardation coefficient, as previously described.

6.2 Contaminant Migration

This section discusses the likely site-specific source areas at Site 86 and potential mechanisms for contaminant release and migration.

Fundamental to describing fate and transport at the site is the CSM, graphically represented by **Figure 2-3**. The CSM is used to qualitatively evaluate the various contaminant sources, release mechanisms, relative rates of migration, persistence of contaminants, and potential migration pathways at Site 86.

6.2.1 Source Areas

Based on data collected during the ESRI, the greatest concentrations of contaminants are associated with three large, diffuse groundwater plumes (**Figure 5-5** through **Figure 5-10**). The primary contaminants in the plumes are TCE, cis-1,2-DCE, and VC.

The westernmost plume appears to have originated near SWMU 303/318 and is likely a result of surficial releases associated with the aircraft Hangar AS515 and former Helicopter Wash Rack, Building AS513. The central plume appears to have originated near Building AS510 and is likely the result of surficial releases associated with former aircraft maintenance activities. The easternmost plume appears to be associated with an open, unlined drainage ditch that receives surface water runoff from the stormwater conveyance network within the eastern portion of the flight line.

TPH and other petroleum hydrocarbon-related contaminants have been detected at Site 86 at five separate UST sites (**Figure 2-3**). At each site, the UST or AST has been removed but several of the UST sites have not been closed due to the presence of contaminated soils which may act as secondary sources. However, the LTM and more recent monitoring events indicate that ongoing releases to groundwater are not occurring as concentrations of petroleum hydrocarbons are decreasing.

SVOCs, pesticides, and metals were detected in sediment, surface soil, subsurface soil, and surface water collected from the industrial, flight line, and common areas at Site 86 (**Figure 5-1** through **5-4);** however, their concentrations are not indicative of a single historical or ongoing release. Rather, they appear to be associated with naturally occurring levels (in the case of certain metals such as arsenic), anthropogenic sources related to aircraft operation (SVOCs), or the sitewide land application of pesticides.

Section 2.2 provides a complete summary of the potential source areas at Site 86 that may have contributed to the contaminants described above.

6.2.2 Releases from Soil to the Atmosphere

TPH and other petroleum hydrocarbon-related contaminants have been detected above NC UST Program Action Levels at five UST sites within the Site 86 boundary. Thus, volatilization, which is the primary mechanism of releases from the soil to the atmosphere, may be considered part of the potential contaminant release at Site 86. However, the volatile compounds have likely degraded or depleted due to the age of the releases.

A phased Basewide Vapor Intrusion (VI) Evaluation was performed at MCB CamLej to assess potential VI exposure in site buildings resulting from VOC-impacted groundwater. (CH2M HILL, 2009b). The VI Evaluation, specific to Site 86, is discussed in detail in Section 7.2.7. The results of the evaluation indicated that VI is not currently a risk to site occupants and that it is unlikely to be a risk in the future based on current VOC concentrations in groundwater.

6.2.3 Releases from Soil to Groundwater

Precipitation that falls within the boundary of Site 86 tends to drain toward the stormwater collection system from developed areas, evaporate or transpire into the air, or infiltrate the ground surface near undeveloped portions of the site, such as the northeast grass area. Infiltrating water generally reaches the water table at approximately 4 to 14 feet bgs and enters the shallow groundwater system.

Infiltration of precipitation through the unsaturated vadose zone can potentially dissolve contaminants and strip them from the soil, then transport them to the underlying groundwater. Thus, sediment, surface soil, and subsurface soil, which contain concentrations of SVOCs, pesticides, and metals above screening levels, can serve as sources of contaminants detected in groundwater. However, a large portion of Site 86 (with the exception of the northeast grass area) is either paved or covered by buildings, which limits the infiltration of precipitation through the impacted sediment and soil.

6.2.4 Migration of Contaminants in Groundwater

The New River is located downgradient of the eastern boundary of Site 86, and is the ultimate receptor for surface water and groundwater discharge from the site. Dissolved concentrations of the COCs can be transported by groundwater movement at a rate determined by seepage velocity and retardation properties of the aquifer media.

6.3 Solute Transport Modeling

Predictive modeling was conducted as part of the ESRI to evaluate the potential for known concentrations of TCE and VC originating from sources within Site 86 to migrate in groundwater toward the New River. The modeling effort was also used to estimate the timeframe required for site contaminants to attenuate to levels below NCGWQS, assuming no remedial efforts are performed.

The models used included Modflow-2000 (MF2K), to create a groundwater flow model (GFM), and MT3DMS to model the solute fate and transport.

It should be noted that the models used in this evaluation are screening level tools. Results of the model evaluation should be used only as estimates when considering remedial technologies and not as representative of actual future concentrations.

6.3.1 Model Development and Calibration

This section describes the development and application of a numerical groundwater flow and transport model that simulates steady-state groundwater flow beneath Site 86. The development and calibration of the Site 86 GFM and solute model are described in detail in **Appendix J**.

Model Development

The model was designed to simulate the groundwater flow and potential transport of TCE and VC at Site 86 and to evaluate whether dissolved phase concentrations of TCE or VC could reach the New River, and if so, to assess both the timeframe and magnitude of concentrations.

The Site 86 GFM was developed with the MF2K code (Harbaugh et al., 2000) to solve the groundwater flow equations and establish a set of steady-state groundwater elevations and associated fluxes. The MT3DMS code (Zheng and Wang, 1999) was used in conjunction with MF2K to simulate the transport of TCE and VC beneath Site 86. The Site 86 GFM and transport models were developed with the aid of the pre- and post-processing software, Groundwater Vistas, Version 5.0 (Environmental Simulations Inc., 2007). See **Appendix J** for more detailed computer code description.

Model Calibration

The Site 86 GFM was calibrated in accordance with the ASTM *Standard Guide for Calibrating a Ground-Water Flow Model Application*. A stepwise calibration approach was implemented to achieve sufficient calibration.

The process of calibrating the Site 86 GFM to March 2010 heads and head-differences between layers, and groundwater flow directions, resulted in a model suitable for its intended application. See **Appendix J** for a detailed discussion of the model calibration process and results.

Model Application and Prediction

The Site 86 GFM was calibrated to simulate three-dimensional (3D), steady-state subsurface flow based on the March 2010 groundwater elevation data. The steady-state head field provides a numerical framework for the simulation of solute transport. The calibrated version of the Site 86 GFM was used to forecast potential TCE and VC plume conditions by using the current 3D distributions of TCE and VC concentrations as initial solute conditions. The TCE and VC concentration data from the 2009-2010 sampling events were distributed in the model in the appropriate layers and the model was run forward-in-time for a period of 100 years. Despite the uncertainties associated with the TCE source areas, the approach of starting with recent TCE and VC conditions and looking forward-in-time is sufficient for estimating when and if dissolved phase concentrations of TCE and VC could reach the New River.

Appendix J-Figure 5-3 shows the modeled extents of the TCE and VC plumes. Modeled plume footprints are depicted at 5, 10, and 15 years of transport after the starting conditions. The footprints shown on **Appendix J-Figure 5-3** are the NCGWQS for TCE and VC: 3 and 0.03 µg/L, respectively. According to the model, the plumes migrate in an east-northeastward direction toward the New River in the general direction of groundwater flow. However, beyond approximately 15 years from the start of the simulation, the modeled TCE plume begins to contract, and by 21 years ceases to exist at concentrations greater than 3 µg/L. The modeled VC plume reaches the New River after approximately 10 years of the simulation. The VC plume continues to expand in an east-northeastward direction through 40 years of simulated transport after the starting conditions. According to the models, without including continuing sources of TCE and VC, these plumes persist at concentrations above their respective NCGWQS for at least 100 years. This occurs because the simulated mass in the immobile domain slowly diffuses into the mobile domain over the simulation period, sustaining the plumes.

Appendix J-Figures 5-4 and **5-5** show the simulated chemographs (graphs of concentration over time) of TCE and VC, respectively, under naturally occurring conditions (i.e., without intervention to reduce source area concentrations). Virtual monitoring wells were programmed into the transport model at selected locations between the site and the New River to monitor simulated solute concentrations. Locations of virtual monitoring wells were selected to illustrate modeled solute migration along approximate plume centerlines and in lateral areas.

Appendix J-Figure 5-4 shows that the maximum predicted concentration of TCE (3 µg/L) will occur in the vicinity of the three easternmost virtual monitoring wells bordering the New River in roughly 15 to 20 years. **Appendix J-Figure 5-5** shows that the maximum VC concentration at these same three wells will be approximately 0.2 µg/L within the next 10 years.

The transport model indicates that in the absence of active remedial efforts, TCE and VC at detectable concentrations could eventually migrate into deeper portions of the Castle Hayne aquifer and potentially reach the New River.

In summary, the solute transport model suggests that the plumes would migrate toward the New River. The simulated chemographs presented on **Appendix J-Figures 5-4** and **5-5** indicate TCE and VC concentrations in groundwater near the New River within 1 µg/L of their respective NCGWQS for both TCE and VC. This trend suggests that TCE and VC could reach the New River at detectable concentrations as a result of the existing plumes beneath Site 86, even without continuing sources. However, these concentrations have been predicted to be below the Human Health NCSWQS of 30 µg/L and 2.4 µg/L, respectively.

TABLE 6-1
Physical, Chemical, and Half-Life Data of COCs
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Molecular Weight (g/mole)	Specific Gravity (unitless)	Mean Water Solubility (mg/L)	Vapor Pressure @ 20ºC (mmHg)	K_h (atm-m^3/mole)	Log K_{oc} (mL/g)	Mean Log K_{ow} (mL/g)	Half-Life Range (days)					
								Soil		Groundwater		Surface Water	
								Low	High	Low	High	Low	High
VOCs													
Trichloroethene	131.40 (5)	1.464 (7)	1312 (7)	58 (7)	0.0091 (7)	2.10 (3)	2.33 (7)	180 (2)	365 (2)	320 (2)	1,640 (2)	180 (2)	365 (2)
Tetrachloroethene	165.83 (5)	1.623 (7)	275 (7)	14 (7)	0.0153 (7)	2.56 (7)	2.79 (7)						
1,1-Dichloroethene	96.94 (5)	1.218 (7)	3,920 (7)	495 (7)	0.021 (7)	1.81 (3)	2.13 (7)	2.33 (6)		2.33 (6)		0.01875 (6)	
Cis-1,2-Dichloroethene	96.94 (1)	1.28 (3)	3,500 (3)	200 (3)	0.0075 (3)	1.5 (3)	1.86 (3)	28 (2)	180 (2)	56 (2)	2,875 (2)	28 (2)	180 (2)
Vinyl Chloride	62.50 (4)	0.911 (7)	1,900 (7)	2580 (7)	0.056 (7)	0.91 (3)	0.60 (7)	Rapid (6)		18 (6)		0.0194 (6)	
Benzene	78.11 (5)	0.877 (7)	1,770 (7)	76 (7)	0.00548 (7)	1.81 (3)	2.05 (7)	100 (6)		1.4 (6)		0.026 (6)	
SVOCs													
Benzo(b)fluoranthene	252.32 (8)		0.0012 (7)	5.0×10^{-7} (7)	1.22×10^{-5} (7)	5.74 (3)	6.57 (7)						
Benzo(g,h,i)perylene	276.34 (10)		2.6×10^{-4} (7)	1.01×10^{-10} @ 25º C (7)	1.44×10^{-7} (9)	6.2 (3)	7.1 (7)						
Dibenzo(a,h)anthracene	278.36 (10)	1.282 (7)	5.0×10^{-4} (7)	~10^{-10} (7)	7.3×10^{-8} (9)	6.52 (3)	6.17 (7)						
Indeno(1,2,3-cd)pyrene	276.34 (10)		0.062 (7)	10^{-10} @ 25º C (7)	6.95×10^{-8} (9)	6.2 (3)	6.84 (7)						
Metals													
Chromium	52 (10)		NA	1	NA	NA	NA						

Notes:
K_h - Henry's Law Constant
K_{oc} - Organic carbon partition coefficient
K_{ow} - Octanol-water partition coefficient
NA - Indicates parameter not appropriate for the chemical
U - No value is provided because of the uncertainty in the form of these chemicals in the environment.
Data sources:
(1) Montgomery and Welkom. 1989. Groundwater Chemicals Desk Reference. Volume 1.
(2) Howard, Ph. H. et al. 1991. *Handbook of Environmental Degradation Rates.*
(3) United States Environmental Protection Agency. October 1990. *Subsurface Contamination Reference Guide.*
(4) Montgomery, John H. 1996. Groundwater Chemicals Desk Reference. Second Edition.
(5) Spectrum Laboratories Chemical Fact Sheets. <http://www.speclab.com/search.html> Last accessed 7/2/10.
(6) Montgomery, John H. Groundwater Chemicals Desk Reference. Third Edition.
(7) Watt, Richard. 1998. *Hazardous Wastes: Sources Pathways Receptors.*
(8) United States Department of Labor Occupation Health & Safety Administration Health Guidelines. <http://www.osha.gov/SLTC/healthguidelines/index.html>. Last accessed 7/2/10.
(9) U.S. Department of Health and Human Services, Public Health Services, Agency for Toxic Substances and Disease Registry. August 1995. *Toxilogical Profile for Polycyclic Aromatic Hydrocarbons*.
(10) LaGrega, M.D., Buckingham, P.L., and Evans, J.C. 1994. *Hazardous Waste Management*.

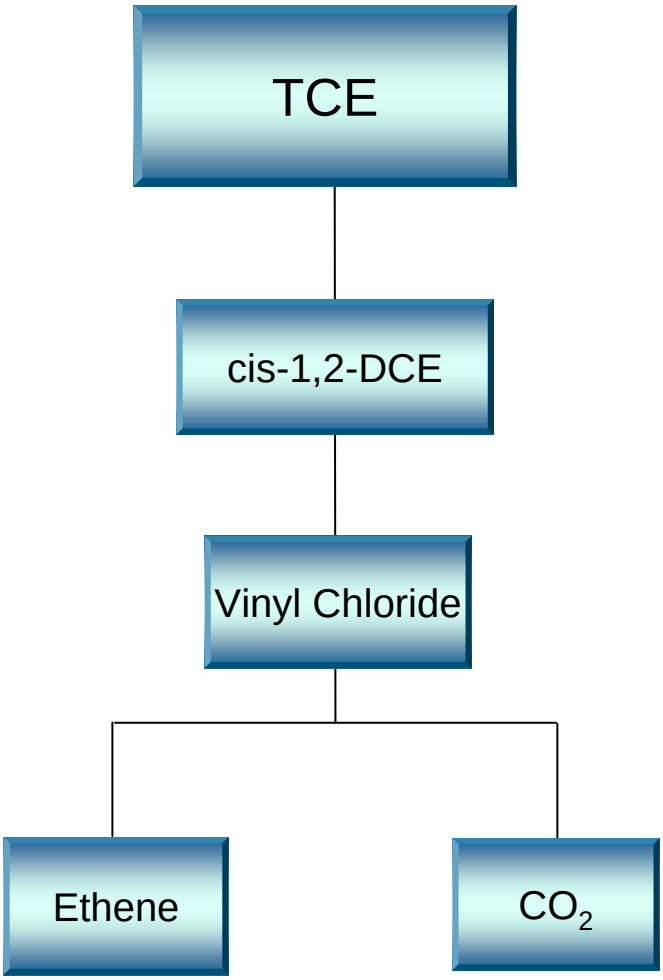
Generated By: K.Howell/CLT
Checked By: T.Grim/CLT

TABLE 6-2
Soil Retardation Coefficients for Representative Chemicals
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemicals	Log K_{oc} (mL/g)	K_d (mg/g)	R (dimensionless)	V_{coc} (ft/day)	
				Surficial Aquifer	Castle Hayne Aquifer
Trichloroethene	2.10	0.15	2.40	0.043 to 0.080	5.83×10^{-3} to 0.012
1,1-Dichloroethene	1.81	0.08	1.72	0.061 to 0.113	8.24×10^{-3} to 0.017
Cis-1,2-Dichloroethene	1.50	0.04	1.35	0.074 to 0.137	0.010 to 0.021
Vinyl Chloride	0.39	0.00	1.03	0.104 to 0.192	0.014 to 0.029
Benzene	1.81	0.08	1.72	0.061 to 0.113	8.24×10^{-3} to 0.017

Notes:
K_d - Distribution coefficient
K_{oc} - Organic carbon partition coefficient
NA - Not applicable; K_d provided
n_e - Effective porosity = 0.20
p_b - Soil bulk density = 1.85 grams per cubic centimeter
R - Retardation coefficient = $1 + K_d \times p_b / n_e$
V_{coc} - Contaminant migration velocity (ft/day)
For organics, Kd = Koc × fraction of organic carbon, estimated to be 0.0012 for soil based on site-specific measurements cited in Woodward-Clyde, et. al.,

Generated By: K.Howell/CLT
Checked By: T.Grim/CLT



TCE Trichloroethene
DCE Dichloroethene
CO_2 Carbon Dioxide

Figure 6-1
Degradation Pathway of TCE
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated by: K. Howell/CLT Checked by: T. Grim/CLT

SECTION 7

Human Health Risk Assessment

This section presents the results of a Baseline HHRA for soil, surface water, sediment, and groundwater at Site 86. The facility overview and history are presented in Section 2. The data used for this Baseline HHRA are discussed in Section 5. The fate and transport evaluation of the detected chemicals is discussed in Section 6.

An HHRA was performed for Site 86 by Baker in 1996 as part of the Final RI Report for OU 20 (Baker, 1996). The HHRA included an evaluation of the risk associated with exposure to soil and groundwater within the original Site 86 boundary. An Amended RI for OU No. 20, Site 86, was prepared by Baker et al. in May 2003 (CH2M HILL/Baker/CDM, 2003). An HHRA was performed as part of the Amended RI, and included the RI and post-RI subsurface soil and groundwater sampling data. The site boundary has been expanded since the completion of the Amended RI, and now includes a stormwater retention pond, drainage ditch, and part of the flight line east of the original site boundary. Data collected from these expanded areas were evaluated in the HHRA presented in this ESRI.

Section 7 consists of two subsections. The first, Section 7.1, presents a review of the 2003 Amended RI HHRA. Section 7.2 is the Baseline HHRA for the additional surface water, sediment, groundwater, and soil data collected at Site 86 since 2007.

Supplemental information used in the RA is presented in **Appendix I** and includes the *Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Manual, Part D* (RAGS Part D) (USEPA, 2001a) tables, and additional supporting tables. Guidance documents used for preparing the HHRA include *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Part A, Interim Final* (RAGS Part A) (USEPA, 1989), RAGS Part D (USEPA, 2001a), *Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final* (RAGS Part E) (USEPA, 2004), and USEPA Region 4 *Supplemental Guidance to RAGS: Region 4 Bulletins* (USEPA, 2001b).

7.1 Review of 2003 Amended Remedial Investigation

The Baseline HHRA conducted as part of the 1996 RI by Baker was updated by Baker as part of the Amended RI for Site 86 to evaluate if unacceptable risks may be associated with potential exposure to existing conditions at the site. The 2003 Baseline HHRA considered the most likely routes of potential human exposure for both current and future risk scenarios. Soil and groundwater data from the site-specific RI and post-RI field investigation activities within the original Site 86 boundary (**Figure 2-2**) were evaluated in the Baseline HHRA. Additionally, validated LTM data were incorporated into the groundwater data set. The results of the Baseline HHRA led to the following conclusions:

- No unacceptable risks or hazard levels are identified for the current adolescent and adult trespassers, or current military Base personnel.

- Concentrations of TCE in groundwater indicate that the exposure to TCE in groundwater at Site 86 could result in adverse health effects for the future adult and child resident and future construction worker.

Subsequent to the 2003 HHRA (CH2M HILL/Baker/CDM, 2003), CH2M HILL collected additional surface soil, sediment, surface water, and groundwater data. These additional data were compared with the data evaluated in the Amended RI HHRA (CH2M HILL/ Baker/CDM, 2003). Additionally, new screening criteria for selecting chemicals of potential concern (COPCs) for human health evaluation had been released, and all of the data (both the new data not previously evaluated and the old data evaluated in the Amended RI) were compared to these new screening criteria.

In addition to new screening criteria, an updated methodology for the calculation of exposure point concentrations (EPCs) was released and, therefore, EPCs were estimated using this newer methodology. Also, the estimated EPCs were compared to the EPCs from the Amended RI to see if there would be any changes that would affect the results of the HHRA. In the 2003 HHRA, the data were tested for normal and lognormal distributions. If the data fit a normal distribution (even if they fit a lognormal distribution also), the EPC was set as the 95 percent upper confidence limit (UCL) of the arithmetic mean of the data set. If the data fit a lognormal distribution, or did not fit either a normal or lognormal distribution, the EPC was set as the 95 percent UCL of the arithmetic mean of the log-transformed data. Current EPC calculation procedures included in the USEPA's ProUCL software are more thorough and include multiple tests in determining the type of data distribution (normal, lognormal, gamma, or non-parametric). The ProUCL software provides an output complete with a recommended UCL value for use as the EPC, based on the best distribution fit for the data set. The groundwater EPC calculation method has not changed from the method used in the 2003 HHRA, as the arithmetic mean concentration of the wells from within the plume is used as the EPC.

Toxicity criteria used in the Amended RI HHRA were compared to current toxicity values to see if any changes in toxicity criteria would result in any changes to the previously drawn conclusions. The updated sources of toxicity criteria include those in USEPA's tiered approach for obtaining toxicity values (USEPA, 2003a):

- USEPA's Integrated Risk Information System (IRIS) database (USEPA, 2009a)
- Provisional Peer Reviewed Toxicity Value (PPRTV) database maintained by the USEPA's National Center for Environmental Assessment (NCEA) and the Superfund Health Risk Technical Support Center (STSC)
- Other USEPA and non-USEPA sources including NCEA, Agency for Toxic Substances and Disease Registry (ATSDR), Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997a), California EPA (Cal EPA), USEPA's Office of Water, and World Health Organization (WHO)

Based on an evaluation of changes in RA methodologies since the 2003 HHRA, there would be no significant changes to the conclusions of the HHRA for the data collected from within the original site boundary. Soil from this area was not re-sampled after 2003, so this original footprint was not evaluated again in the updated HHRA presented in Section 7.3. The concentrations of TCE in groundwater have decreased over time. However, the

concentrations of VC, a degradation product of TCE, have increased. This would likely result in risks to receptors above acceptable levels associated with groundwater use.

7.2 Updated Baseline Human Health Risk Assessment

This section presents the Baseline HHRA for soil, surface water, sediment, and groundwater, using the data that have been collected within the expanded Site 86 boundary after completion of the 2003 Amended RI.

7.2.1 Conceptual Site Model

The human health CSM presents an overview of site conditions, potential contaminant migration pathways, and exposure pathways to potential receptors. **Figure 7-1** presents the CSM for Site 86 associated with soil, surface water, sediment, and groundwater.

Site 86 is located within MCAS New River, adjacent to Camp Geiger in the northwest corner of the base in Onslow County, North Carolina (**Figure 2-2**). In August 2006, the Site 86 boundary was expanded to include the northern portion of the MCAS New River flight line between White Street and Curtis Road. In 2010, the Site 86 boundary (approximately 146 acres) was further expanded to include the Building AS508 and the northeast grass area near the flight line.

The flight line at MCAS New River has been in service since 1951. Over time, the surrounding area has been developed to provide support for aircraft and personnel.

Site 86 served as a storage area for petroleum products between 1954 and 1988. In 2006 and again in 2009, the Site 86 boundaries were expanded to include a majority of the industrial area adjacent, north, and east of the MCAS New River flight line. Source areas, summarized in Section 2.2, included in Site 86 after the boundary expansions include the Helicopter Wash Rack Building AS513; SWMU 303; and SWMU 318; hangars AS504, AS515, AS518, AS3900, and AS3905; USTs AS410, AS510, and AS428; a drainage ditch, and an alleged fuel disposal area.

Based on current site use and layout, soil was evaluated from two different exposure areas: the industrial area and the flight line area. Additionally, two surface water bodies were evaluated for Site 86: the pond and the drainage ditch. For groundwater, the three different aquifers present at the site, the surficial, the upper Castle Hayne, and the middle Castle - Hayne aquifers were evaluated separately.

Table 1 in **Appendix I** summarizes the potential exposure pathways and scenarios considered for Site 86. Potential current receptors include military personnel, industrial and maintenance workers, and trespassers/visitors. The current receptors may come in contact with surface soil, sediment, and surface water; the specific receptors exposed to each of these media for each of the exposure areas are shown on Table 1 in **Appendix I**, and on the CSM, **Figure 7-1**. Exposure routes for surface soil may include incidental ingestion and dermal contact with the surface soil and inhalation of particulate and volatile emissions from the surface soil. Exposure routes for surface water and sediment may include incidental ingestion and dermal contact while wading in the pond or drainage ditch. Although people fish in the pond, the area is posted with signs indicating that only “catch and release” fishing is permitted. Although fish ingestion is not expected to occur,

trespassers were assumed not to abide by the "catch and release" signage and were considered to be potential receptors exposed to the fish from the pond.

Potential future receptors include the current receptors and future residents and construction workers. It is assumed that the future receptors could be exposed to surface and subsurface soil if future residential houses or additional industrial buildings are constructed at the site, or excavation activities occur onsite, and the soil is re-worked, bringing the subsurface soil to the surface. However, there are no plans for a future site use different than the current use. Exposure routes for the surface and subsurface soil are the same as those for current surface soil: incidental ingestion of the soil, dermal contact with the soil, and inhalation of particulate and volatile emissions from the soil. Additionally, the risk assessment also assumes that a future resident and construction worker could be exposed to the surface water and sediment at the site. The residential exposure to surface water and sediment would be similar to that of a trespasser/visitor.

Potable water supplies for MCB CamLej and the surrounding residential area are provided by water supply wells that pump groundwater from the Castle Hayne aquifer. Although freshwater is present within the surficial, Castle Hayne, Beaufort, and Peedee aquifers, all of which are located below MCB CamLej, only the Castle Hayne aquifer is used by MCB CamLej as a water supply source (Cardinell et al., 1993). The groundwater use patterns are already established for the Base and the area around Site 86, so use of site groundwater for industrial or residential purposes is unlikely. However, state and federal governing policies assume that underground freshwater resources are potable, and should be maintained as such. Therefore, a potable use scenario was evaluated in this RA.

It was assumed that, if future residential development of the site occurs, the residents could use the groundwater as a potable water supply. The residents would be exposed through ingestion, dermal contact, and inhalation while bathing, as well as inhalation of indoor air. It was also assumed that the groundwater could be used as a future potable water supply for industrial workers, and that the industrial workers would be exposed through ingestion and dermal contact. Additionally, due to the groundwater depth (approximately 5 foot bgs), construction workers could be exposed to the groundwater through inhalation of volatile compounds and dermal contact in an excavation during construction activities.

Although the exposure pathways associated with potable use of groundwater are likely incomplete for current and future human receptor populations at Site 86, there is the potential for VI of volatile constituents in groundwater into existing and future buildings. The potential VI pathway at Site 86 is being evaluated as part of a phased Basewide VI Evaluation. A detailed summary of the VI evaluation is presented in Section 7.2.7.

7.2.2 Scope of Risk Assessment

The primary objective of the HHRA was to assess current and future health risks associated with exposure to Site 86 soil, surface water, sediment, and groundwater under current site conditions. The RA consists of the following components:

- **Identification of COPCs**—identification of the contaminants found onsite and selection of the COPCs. COPCs identified in this screening are the focus of the subsequent evaluation in the RA.

- **Exposure Assessment**—identification of the potential pathways of human exposure, characterization of the potentially exposed populations, and estimation of the magnitude, frequency, and duration of exposures.
- **Toxicity Assessment**— assessment of the potential adverse effects of the COPCs and compilation of the toxicity values used for developing numerical risk estimates.
- **Risk Characterization**—integration of the results of the exposure assessment and toxicity assessment to develop numerical estimates of health risks.
- **Uncertainty Assessment**—identification and discussion of sources of uncertainty associated with the data, methodology, and the values used in the RA.

These components are described briefly in the following sections.

7.2.3 Identification of COPCs

The identification of COPCs includes data collection, data evaluation, and data screening. The data used for the quantitative risk analysis were validated prior to use in the HHRA and met project-specific data quality objectives (DQOs). The data collection and evaluation steps were performed independently and involved gathering and reviewing the available site data to determine if the available analytical data were usable for RA purposes (such as, met DQOs and represent current conditions). Screening against human health risk based criteria and background concentrations to identify COPCs further reduced the data set for each environmental medium quantitatively evaluated for the site.

Data Summary and Evaluation

Detailed results of the sampling at Site 86 are presented in Section 5. The RA included evaluation of the soil data collected in December 2007 and October 2009, sediment and surface soil samples collected from the pond in June and the drainage ditch in November 2009 and March 2010, and groundwater samples collected in December 2009 and January 2010. **Table 7-1** lists the samples that were evaluated in the RA. The full sets of data evaluated in the RA are included in **Appendixes F** and **G**. Unfiltered groundwater samples were analyzed in the RA following USEPA Region 4 guidance (USEPA, 2001b).

All of the data selected for inclusion in the RA were evaluated to determine their reliability for use in the quantitative RA. A review of the validated data identified the following criteria for data usability:

- Estimated values flagged with a J qualifier were treated as unqualified detected concentrations.
- Data qualified with an R (rejected) were not used in the RA.
- Data qualified with a B (blank contamination) were used in the RA as if the constituents were not detected, with the blank-related concentrations of each constituent used as the sample detection limit.
- For duplicate samples, the maximum concentration between the two samples was used as the sample concentration.

Selection of COPCs

All of the detected constituents were screened following the procedures described below. The maximum detected concentration of each constituent in each exposure area for each medium was compared to the criteria discussed below to select the COPCs for the medium. If the maximum concentration exceeded the criteria, the constituent was selected as a COPC. Additionally, for constituents that were not detected, the maximum detection limit was compared to the screening criteria to identify those constituents with detection limits above the criteria. These constituents were not retained as COPCs for quantitative evaluation in the RA, but are discussed in the uncertainty assessment. The COPC screening is presented in **Appendix I**, Tables 2.1 through 2.18.

- **Comparison with Health-based Criteria for Soil:** Soil data were compared to the USEPA Residential Soil RSLs (USEPA, 2010). RSLs based on noncarcinogenic effects were divided by 10 to account for exposure to multiple constituents. RSLs based on carcinogenic effects were used as presented in the RSL table.
- **Comparison with Health-based Criteria for Ambient Air:** Concentrations of chemicals in air emanating from contaminated soil by volatilization or fugitive dust emissions were compared to the USEPA Residential Air RSLs. RSLs based on noncarcinogenic effects were divided by 10 to account for exposure to multiple constituents. RSLs based on carcinogenic effects were used as presented in the RSL table. The ambient air concentrations were calculated following USEPA's soil screening guidance (USEPA, 2002), as shown in **Appendix I**, Tables 2.2, 2.2A, 2.4, 2.4A, 2.8, and 2.10**.**
- **Comparison with Health-Based Criteria for Sediment:** Sediment data were compared to the USEPA Residential Soil RSLs (USEPA, 2010). RSLs based on non-carcinogenic effects were divided by 10 to account for exposure to multiple constituents. RSLs based on carcinogenic effects were used as presented in the RSL table.
- **Comparison with Health-based Criteria for Surface Water:** Surface water data were compared to the NC 2Bs for human health (NCDENR, 2010) and the USEPA National Recommended Water Quality Criteria (NRWQC) (USEPA, 2010) for human health for ingestion of water and aquatic organisms, if available, which are protective for both potable use of the surface water and ingestion of fish caught in the surface water. Constituents without an NC 2B or NRWQC standard were compared to the USEPA Tap Water RSL (USEPA, 2010). RSLs based on noncarcinogenic effects were divided by 10 to account for exposure to multiple constituents. RSLs based on carcinogenic effects were used as presented in the RSL table. Constituents with a maximum detected concentration below the NC 2B and NRWQC, or the RSL if no NC 2B or NRWQC standard was available, were not retained as COPCs.
- **Comparison with Health-based Criteria for Groundwater:** Groundwater data were compared to the USEPA Tap Water RSLs (USEPA, 2010). RSLs that are based on noncarcinogenic effects were divided by 10 to account for exposure to multiple constituents. RSLs based on carcinogenic effects were used as presented in the table. Groundwater data were also compared to the National Primary Drinking Water Regulation MCLs (USEPA, 2009c) and the North Carolina maximum allowable

concentrations (15A NCAC 2L); however, these comparisons were not used to select the groundwater COPCs.

- **Comparison to Background Concentrations**: Following USEPA Region 4 RA guidance (USEPA, 2001a), the maximum detected concentrations of naturally occurring inorganic constituents in groundwater and soil were compared to twice the mean Base background concentration (Baker, 2001). Background data are not available for surface water or sediment.
- **Essential Human Nutrients:** Constituents that are considered essential nutrients, present at low concentrations (i.e., only slightly elevated above naturally occurring levels), and toxic only at very high doses were eliminated from the quantitative risk analysis. These constituents include calcium, magnesium, potassium, and sodium.
- Following USEPA RA guidance (USEPA, 2001a), any member of a chemical class that had other members selected as COPCs (i.e., carcinogenic polynuclear aromatic hydrocarbons [cPAHs]) was retained as a COPC.

Summary of COPCs

Table 7-2 identifies the constituents that were identified as COPCs for each of the exposure areas in each medium.

Four metals (aluminum, arsenic, chromium, and cobalt), and four SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene) were identified as COPCs for surface soil in the industrial area. Benzo(k)fluoranthene and chrysene were also identified as COPCs, based on the selection criteria of a chemical from the same class, cPAHs. The same constituents with the addition of iron were identified as COPCs for combined surface and subsurface soil in the industrial area. For the soil to air pathway for surface soil and combined surface and subsurface soil in the industrial area, chromium was retained as a COPC.

Three metals (aluminum, arsenic, and chromium), and four SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene) were identified as COPCs for surface soil in the flight line area. Benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene were also identified as COPCs, based on the selection criterion of a chemical from the same class, cPAH. The same constituents with the addition of cobalt, iron, and vanadium were identified as COPCs for combined surface and subsurface soil in the flight line area. No COPCs were identified for the soil to air pathway for surface soil in the flight line area. Therefore, inhalation of particulate and volatile emissions from surface soil in the flight line area is considered an incomplete exposure pathway and risks associated with this pathway were not quantified. Chromium was retained as a COPC for the soil to air pathway for combined surface and subsurface soil in the flight line area.

One metal (iron) was identified as a COPC for surface water in the pond. Five SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, indeno[1,2,3-cd]pyrene, and naphthalene), and four metals (aluminum, iron, manganese, and vanadium) were identified as COPCs for surface water in the drainage ditch.

One SVOC (benzo[a]pyrene) and three metals (arsenic, chromium, and iron) were identified as COPCs for sediment in the pond. Benzo(a)anthracene, benzo(b)fluoranthene,

benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were also identified as COPCs, based on the selection criterion of a chemical from the same class, cPAHs. Six SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene), and eight metals (aluminum, antimony, arsenic, cadmium, chromium, cobalt, iron, and vanadium) were identified as COPCs for sediment in the drainage ditch. Chrysene was also identified a COPC, based on the selection criterion of a chemical from the same class, cPAHs.

Although only the samples collected from the monitoring wells in the center of the plumes were used to quantify the risks associated with exposure to groundwater, data from all of the monitoring wells were screened to identify the COPCs. In some cases, a constituent was identified as a COPC but was not detected in any of the wells from within the center of a plume in the aquifer being screened, and therefore, it was not quantitatively evaluated in the RA.

Eleven VOCs (1,1-dichloroethane [1,1-DCA], 2-hexanone, benzene, chloroform, cis-1,2-DCE, dichlorofluoromethane, ethylbenzene, MTBE, PCE, TCE, and VC), two SVOCs (benzo[b]fluoranthene and naphthalene), and two metals (antimony, and iron) were detected in the surficial aquifer groundwater samples with maximum detected concentrations above tap water RSLs and background levels for the metals. One plume was identified for the surficial aquifer. The wells within the plume are shown on **Table 7-1**. MTBE was not quantitatively evaluated in the HHRA because it was detected in only 1 of the 24 groundwater samples at a location not within the surficial aquifer groundwater plume that was evaluated in the HHRA. Benzo(b)fluoranthene was not quantitatively evaluated in the HHRA since it was also not detected in any of the wells in the surficial aquifer groundwater plume, and was detected in only 1 of 7 samples analyzed for PAHs.

There were seven VOCs (benzene, chloroform, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, and VC) and one SVOC (benzo[b]fluoranthene) in the upper Castle Hayne aquifer groundwater samples with maximum detected concentrations above groundwater risk-based screening levels. Two plumes were identified for the upper Castle Hayne aquifer, and the monitoring wells associated with these plumes are identified in **Table 7-1**. The COPCs for each plume are identified on **Table 7-2**. Chloroform was not quantitatively evaluated in the HHRA because it was detected in only 1 of 23 samples at a concentration below the MCL and NC 2L and was not detected in a well in either groundwater plume in the upper Castle Hayne aquifer. PCE was not quantitatively evaluated in the HHRA because it was detected in just 1 of 23 samples at a concentration below the MCL and NC 2L and was not detected in a well within either of the groundwater plumes. Benzo(b)fluoranthene was not quantitatively evaluated in the HHRA because it was detected in just 1 of 5 samples at a location not within either of the plumes and at a concentration just above the screening value.

Two VOCs, (chloroform and PCE), five SVOCs (benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) and one metal (chromium) were retained as COPCs in the groundwater from the middle Castle Hayne aquifer and were included in the RA. Two plumes were identified for the middle Castle Hayne aquifer; the wells associated with each of these plumes are identified in **Table 7-1**. The COPCs for each plume are identified on **Table 7-2**.

7.2.4 Exposure Assessment

Exposure assessment is the estimation of the likelihood, magnitude, frequency, duration, and routes of exposure to a chemical. "Exposure" refers to the potential contact of an individual (or receptor) with a chemical. Exposure can occur when contaminants migrate from a source to an exposure point, or when a receptor comes into direct contact with one or more contaminated media.

The three components of exposure assessment include:

- Characterization of exposure setting
- Identification of exposure pathways
- Quantification of exposure

Characterization of Exposure Setting

A description of MCB CamLej is presented in Section 7.2.1, the human health CSM. Additionally, Section 2.1.2 describes the facility-wide demography and land use, and Section 4 describes the physical setting of Site 86, including the physiography, climate, surface water hydrology, topography, geology, and hydrogeology.

Demographic data are presented in Section 2.1. Specific information on exposed populations at Site 86 is presented in the human health CSM discussion in Section 7.2.1. **Table 7-3** summarizes the potentially exposed populations at Site 86.

Identification of Exposure Pathways

An exposure pathway can be described as the physical course that a COPC takes from the point of release (or source) to a receptor. To be complete, an exposure pathway must have all of the following components:

- A source (e.g., constituent residues in soil)
- A mechanism for chemical release and migration (e.g., leaching)
- An environmental transport medium (e.g., groundwater)
- A point or site of potential human contact (exposure point, e.g., drinking water)
- A route of intake (e.g., ingestion of groundwater used as a drinking water source)

In the absence of any one of these components, an exposure pathway is considered incomplete and, by definition, there is no unacceptable risk or hazard. In some cases, a receptor may contact a source directly, eliminating the release and transport pathways.

The potential exposure pathways for Site 86 were identified in the CSM (**Figure 7-1**) and are shown in **Table 7-3** and **Appendix I**, Table 1.

The following subsections discuss the elements of the exposure pathways for Site 86.

Contaminant Sources As shown on **Figure 2-3**, multiple sources of contamination contributed to the current impacts identified at Site 86.

Release and Transport Mechanisms Contaminant fate and transport, including contaminant mobility and persistence, and the potential contaminant migration pathways and release mechanisms at the site, are discussed in Section 6. The fate and transport of chemicals in groundwater and soil are determined by physical characteristics of the site, as well as by the

chemical and physical properties of the constituents. The primary contaminant release and transport mechanism at Site 86 appears to be spills and leaks from the multiple sources of contamination, and leaching to groundwater, runoff from surface soil to surface water, and discharge from groundwater to surface water. Fate and transport modeling for chemical volatilization from groundwater during showering or during excavation activities was conducted as part of the HHRA to determine contaminant concentrations in air because there were volatile constituents selected as COPCs for the groundwater evaluation. Fate and transport modeling for particulate and volatile emissions from soil to air was also conducted.

Exposure Points and Exposure Routes Exposure points are the locations where humans could contact site-related contamination. Onsite exposure points include soil, surface water, sediment, and groundwater beneath the site. Offsite exposure points are groundwater, surface water, and sediment downgradient of the site.

Table 7-3 lists the exposure pathways that were evaluated in the RA. Table 1, **Appendix I**, includes the exposure pathways that were considered for evaluation and presents the rationale for evaluation of the exposure pathway. Although inhalation of fugitive dust and volatile emissions from flight line area surface soil is identified as being qualitatively evaluated in **Appendix I**, Table 1 and Table 7-3, this pathway was not evaluated because there were no COPCs identified. The VI pathway (i.e., groundwater to indoor air) was evaluated qualitatively in Section 7.2.7.

Section 7.2.1 identifies the potential receptors and exposure pathways. In summary, the current land use exposure routes for quantitative evaluation include the following:

- **Military Personnel—**Incidental ingestion of and dermal contact with surface soil in the industrial exposure area, inhalation of particulate and volatile emissions from surface soil in this area, and incidental ingestion of and dermal contact with surface water and sediment in the pond.
- **Maintenance Worker—** Incidental ingestion of and dermal contact with surface soil in the industrial exposure area and flight line exposure area, inhalation of particulate and volatile emissions from surface soil in these exposure areas, incidental ingestion of and dermal contact with surface water and sediment in the pond, and incidental ingestion of sediment in the drainage ditch adjacent to the flight line.
- **Trespasser/Visitor (adult and youth)—**Incidental ingestion of and dermal contact with surface soil in the industrial exposure area and flight line exposure area, inhalation of particulate and volatile emissions from surface soil in these areas, and incidental ingestion of and dermal contact with surface water and sediment in the pond and drainage ditch (and qualitative evaluation of ingestion of fish caught from the pond).

The future land use exposure routes include the current exposure routes plus the following:

- **Resident (adult and child)—**Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil) in the industrial exposure area and flight line exposure area, inhalation of volatile emissions from soil (combined surface and subsurface soil) in these areas, ingestion of groundwater, and inhalation and dermal contact with groundwater from the surficial aquifer, the upper Castle Hayne aquifer,

and the middle Castle Hayne aquifer while showering/bathing (and qualitative evaluation of incidental ingestion of and dermal contact with surface water and sediment in the pond and drainage ditch).

- **Construction Worker—**Incidental ingestion of and dermal contact with surface water in the pond, incidental ingestion of and dermal contact with sediment in the drainage ditch, incidental ingestion of and dermal contact with combined surface and subsurface soil in the industrial exposure area and flight line exposure area, inhalation of particulate and volatile emissions from soil (combined surface and subsurface soil) in these areas, and dermal contact with and inhalation of volatile emissions from surficial aquifer groundwater.
- **Military Personnel—**Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil) in the industrial exposure area and flight line exposure area, inhalation of particulate and volatile emissions from soil (combined surface and subsurface soil) in these areas, incidental ingestion of and dermal contact with surface water and sediment in the pond.
- **Industrial Worker—** Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil) in the industrial exposure area and flight line exposure area, inhalation of volatile emissions from soil (combined surface and subsurface soil) in these areas, and ingestion of groundwater from the surficial aquifer, the upper Castle Hayne aquifer, and the middle Castle Hayne aquifer.
- **Trespasser/Visitor (adult and youth)—**Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil) in the industrial exposure area and flight line exposure area, inhalation of volatile emissions from soil (combined surface and subsurface soil) from these areas, and incidental ingestion of and dermal contact with surface water and sediment in the pond and drainage ditch (and qualitative evaluation of ingestion of fish caught from the pond).

Quantification of Exposure

Exposure is quantified by estimating the EPCs of COPCs in environmental media and COPC intake by the receptor. Both reasonable maximum exposure (RME) and central tendency exposure (CTE) intakes were included in this evaluation. CTE intakes were calculated for exposure scenarios with RME cumulative cancer risks greater than 1×10^{-4} or cumulative non-cancer hazards greater than 1.0.

Exposure Concentrations

EPCs are estimated constituent concentrations that a receptor may contact and are specific to each exposure medium and exposure area. EPCs may be directly measured or estimated using environmental fate and transport models. Constituent concentrations in soil, surface water, sediment, and groundwater were measured for this assessment. Fate and transport modeling conducted for the Site 86 HHRA included:

- Estimating fugitive dust and volatile emissions from soil following the methods in USEPA's Soil Screening Guidance Document (USEPA, 2002), as shown in Tables 2.2, 2.2A, 2.4, 2.4A, 2.10 and 2.12, **Appendix I**

- Estimating volatile emissions from groundwater while showering using the Foster and Chrostowski (1987) shower model for residential receptors (Tables 7.7.RME Supplements F though J, Tables 7.8.RME Supplements F through J, Tables 7.4.CTE Supplements D through F and 7.5.CTE Supplement E in **Appendix I**)
- Estimating volatile emissions from groundwater in an open excavation for a construction scenario using a Two-Film Volatilization Model (Table 7.6.RME Supplement C in **Appendix I**).

The groundwater data exposure groupings were selected in a manner consistent with USEPA RA guidance (USEPA, 2001a) to evaluate high concentration areas of groundwater plumes in each aquifer. Nine wells were selected from the surficial aquifer (Group 1 - IR86-MW09, IR86-MW10IW, IR86-MW27IW, IR86-MW47, IR86-MW48, IR86-MW56, IR86-MW58, IR86-MW61, and IR86-MW63) to evaluate risk for exposure to the center portion of the plume. Two monitoring wells in the middle Castle Hayne aquifer were analyzed separately (Group 2 - IR86-MW19DW and Group 3 - IR86-MW59DW) due to the detection of VOCs at high concentrations in one location and the detection of SVOCs at high concentrations in another location. The groundwater data exposure groupings for the upper Castle Hayne aquifer included two separate groupings to incorporate two independent plumes. The first exposure group consists of nine monitoring wells (Group 4 - IR86-MW15IW, IR86-MW22IW, IR86-MW30IW, IR86-MW42IW, IR86-MW44IW, IR86-MW48IW, IR86-MW54IW, IR86-MW55IW, and IR86-MW58IW), and the second exposure group consists of six monitoring wells (Group 5 -IR86-MW16IW, IR86-MW29IW, IR86-MW31IW, IR86-MW34IW, and IR86-MW38IW).

The groundwater EPCs were calculated following USEPA Region 4 guidance (USEPA, 2000a). The groundwater RME and CTE EPCs are the arithmetic averages of the concentrations detected in the wells that are within each of the respective contaminant plumes.

ProUCL software Version 4.00.04 (USEPA, 2009d) was used to determine the distribution that the data fit and to calculate the 95 percent UCLs used as the RME EPC for soil, surface water, and sediment. ProUCL identifies three possible data distributions: normal, lognormal, and gamma. The UCL calculation method is then selected based on the data distribution (that is, normal, lognormal, gamma, or non-parametric if the data do not fit any of the distributions). The recommendations outlined in the ProUCL software documentation were followed to select the appropriate UCL (USEPA, 2009d). The maximum detected concentration was used as the EPC in cases where the estimated 95 percent UCL was greater than the maximum detected concentration, or less than 5 samples were available for a data grouping.

Appendix I, Tables 3.1.RME through 3.21.RME and 3.1.CTE through 3.20.CTE present the EPCs for the COPCs for each medium and the rationale for the selected EPC.

Estimation of Chemical Intakes Chemical intake is the amount of the chemical constituent entering the receptor's body. The quantification of exposure is based on an estimate of the average daily intake, the average amount of the chemical contaminant entering the receptor's body per day. Chemical intakes are generally expressed as follows:

$$ADI = \frac{C \times CR \times EF \times ED}{BW \times AT}$$

Where:

ADI = average daily intake (milligrams per kilogram per day [mg/kg-day])
C = chemical concentration (mg/L, mg/kg)
CR = contact rate (liters per day [L/day], milligrams per day [mg/day])
EF = exposure frequency (days per year [days/yr])
ED = exposure duration (years)
BW = body weight (kg)
AT = averaging time (days)

The intake equation requires exposure parameters that are specific to each exposure pathway. Many of the exposure parameters have default values, which were used for this assessment. These assumptions, based on estimates of body weights, media intake levels, and exposure frequencies and duration, are provided in USEPA guidance. Tables 4.1.RME through 4.10.RME and 4.1.CTE through 4.4.CTE in **Appendix I** identify the exposure parameters and intake equations for each of the scenarios evaluated in the HHRA. CTE exposure parameters are provided only for scenarios where the RME risk was greater than USEPA's acceptable non-carcinogenic hazard or carcinogenic risk target levels, as these were the only CTE scenarios quantified in the HHRA.

To estimate exposure via dermal contact with soil, two additional parameters are necessary. The first parameter, the dermal absorption fraction, estimates the amount of a constituent in soil and sediment that would be absorbed by the skin. The absorption fractions of 13 percent for PAHs, 3 percent for arsenic (USEPA, 2004) and the default value for inorganic constituents (0.001) were used (USEPA, 2000a). The second additional parameter is the adherence factor (AF). The AF estimates the amount of soil and sediment that adheres to the skin per unit of surface area. The AFs were obtained from USEPA RAGS Part E (USEPA, 2004) and are included in Tables 4.1.RME, 4.7.RME, 4.1.CTE for soil, and Tables 4.4.RME and 4.6.RME for sediment in **Appendix I**.

The methods presented in the USEPA RAGS Part E (USEPA, 2004) for estimating dermal exposure to water were used to evaluate dermal exposure to surface water and groundwater. The models are shown in Tables 4.4.RME and 4.5.RME (surface water) and Tables 4.9.RME and 4.3.CTE (groundwater) in **Appendix I**. Values for the chemical-specific parameters used in the models were obtained from USEPA's RAGS Part E (USEPA, 2004) and are presented in Tables 7.1.RME Supplement A and 7.3.RME through 7.5 Supplement A for surface water, and Tables 7.6.RME Supplements A and B, 7.7.RME Supplements A through E, and 7.8.RME Supplements A through E, for groundwater, all in **Appendix I**.

7.2.5 Toxicity Assessment

Toxicity assessment is used to define the relationship between the magnitude of exposure and possible severity of adverse effects, and to weigh the quality of available toxicological evidence. Toxicity assessment generally consists of two steps: hazard identification and dose-response assessment. Hazard identification is the process of determining the potential adverse effects from exposure to the constituent along with the type of health effect involved. Dose-response assessment is the process of quantitatively evaluating the toxicity information and characterizing the relationship between the dose of the constituent administered or received and the incidence of adverse health effects in the exposed population. Toxicity criteria (e.g., reference doses and slope factors) are derived from the dose-response relationship.

To calculate non-cancer and cancer risks, USEPA recommends that a tiered approach be used to obtain the toxicity values, the reference doses (RfDs), inhalation reference concentrations (RfCs), cancer slope factors (CSFs), and inhalation unit risk factors (IURs) (USEPA, 2003a). The sources of toxicity values are as follows:

- USEPA's IRIS database (USEPA, 2009a)
- PPRTV database maintained by USEPA's NCEA and STSC
- Other USEPA and non-USEPA sources, including NCEA, ATSDR, HEAST (USEPA, 1997a), Cal EPA, USEPA's Office of Water, and World Health Organization (WHO)

The use of provisional toxicity values, such as those from the PPRTV database and Cal EPA, increases the uncertainty of the quantitative risk estimate. If no toxicity values were available for a detected constituent, surrogate constituents were selected and their RSLs were used for the COPC selection process. Surrogates were selected based on previous recommendations from USEPA. The surrogates are identified in Tables 2.1 through 2.7 in **Appendix I**. None of the constituents screened during the COPC selection process using surrogates were identified as COPCs.

Oral and inhalation chronic and subchronic RfDs and RfCs, and associated uncertainty factors (UFs) and modifying factors (MFs) for the COPCs are listed in Tables 5.1 and 5.2 in **Appendix I**. CSFs and IURs are listed in Tables 6.1 and 6.2 in **Appendix I**.

Dermal RfDs and CSFs were calculated from the oral RfDs and CSFs using an oral to dermal adjustment factor, or gastrointestinal (GI) absorption factor. This factor is designed to convert the orally administered dose toxicity factors to dermally absorbed dose toxicity factors (USEPA, 2004). The oral RfDs were converted to dermal RfDs by multiplying by the GI absorption factor and the oral CSFs were converted to dermal CSFs by dividing by the GI absorption factor. If a chemical-specific GI absorption factor was not available or was greater than 50 percent, a GI absorption factor of 100 percent was assumed. The dermal RfDs are included in Table 5.1, **Appendix I**. The dermal CSFs are presented in Table 6.1, **Appendix I**.

Approach for Potential Mutagenic Effects

Consistent with the Cancer Guidelines and Supplemental Guidance (USEPA, 2005a and 2005b), for COPCs which act via a mutagenic mode of action (MMOA), cancer risks were

estimated using age-dependent adjustment factors (ADAFs). Chromium and cPAHs were the only COPCs that are categorized as chemicals with a MMOA. The calculation of cancer risk using ADAFs is presented in Table**s** 7.9RME Supplement A and 7.5.CTE Supplement A of **Appendix I**. As chemical-specific data are not available for the cPAHs or chromium, default ADAFs, as included in the USEPA Region 3 Memorandum, *Derivation of RBCs for Carcinogens that Act Via a Mutagenic Mode of Action and Incorporate Default ADAFs* (USEPA, 2006), were used for the MMOA evaluation.

Constituents without Available USEPA Toxicity Values

Most of the constituents detected at Site 86 have toxicity factors and USEPA RSLs. Detected constituents that did not have RSLs were compared to RSLs for appropriate surrogate constituents during the COPC selection process. The surrogates are identified in the RAGS (USEPA, 2004) Table 2 series.

7.2.6 Risk Characterization

Risk characterization combines the results of the previous elements of the RA to evaluate the potential health risks associated with exposure to the COPCs.

Noncarcinogenic and Carcinogenic Risk Estimation Methods

Potential human health risks are discussed independently for carcinogenic and noncarcinogenic constituents because of the different toxicological endpoints, relevant exposure duration, and methods used to characterize risk. Some constituents may produce both noncarcinogenic and carcinogenic effects, and were evaluated in both groups. The methodology used to estimate noncarcinogenic hazards and carcinogenic risks are described below. Following the description of the methodology, the noncarcinogenic hazards and carcinogenic risks for Site 86 are discussed.

Noncarcinogenic Hazard Estimation

Noncarcinogenic health risks are estimated by comparing the calculated intake to an RfD or RfC. The calculated intake divided by the RfD or RfC is equal to the Hazard Quotient (HQ):

$$HQ = Intake / RfD \text{ or } RfC$$

The intake and RfD or RfC represent the same exposure period (i.e., chronic or subchronic) and the same exposure route (i.e., oral intakes are divided by oral RfDs). An HQ that exceeds 1.0 (i.e., the intake exceeds the RfD) indicates that there is a potential for adverse health effects associated with exposure to that constituent.

To assess the potential for noncarcinogenic health effects posed by exposure to multiple constituents, an HI approach is used (USEPA, 1986). This approach assumes that noncarcinogenic hazards associated with exposure to more than one constituent are additive. Synergistic or antagonistic interactions between constituents are not considered. The HI may exceed 1.0 even if all of the individual HQs are less than 1. HIs are also added across exposure routes and media to estimate the total noncarcinogenic health effects to a receptor posed by exposure through multiple routes and media. An HI greater than 1 indicates that there is some potential for adverse noncarcinogenic health effects associated with exposure to the COCs. However, if the HI is greater than 1, it is possible to separate the HI by target organ/effect to determine if the HI for a specific target organ/effect is greater

than 1. If the HI for each target organ/effect is not above 1, it can be assumed that there is no unacceptable noncarcinogenic hazard to the receptor.

Carcinogenic Risk Estimation The potential for carcinogenic effects due to exposure to site-related constituents is evaluated by estimating the excess lifetime carcinogenic risk (ELCR). ELCR is the incremental increase in the probability of developing cancer during one's lifetime in addition to the background probability of developing cancer. For an individual exposed to a carcinogen with a calculated cancer risk of 2×10^{-6}, for example, the probability of that individual developing cancer increases by 2 in a million above background levels.

Carcinogenic risk is calculated by multiplying the intake by the CSF or IUR.

$$ELCR = Intake \times CSF\ (or\ IUR)$$

The combined risk from exposure to multiple constituents was evaluated by adding the risks from individual constituents. Risks were also added across the exposure routes and media if an individual would be exposed through multiple routes and to multiple media.

When a cumulative carcinogenic risk to an individual receptor under the assumed RME exposure conditions at the site exceeds 100 in a million (i.e., 10^{-4} excess carcinogenic risk), CERCLA generally requires remedial action to reduce risks at the site (USEPA, 1991). If the cumulative risk is less than 10^{-4}, action generally is not required, but may be warranted if a risk-based chemical-specific standard (for example, MCL) is exceeded.

Risk Assessment Results

The results of the risk characterization are presented below by receptor. The risks are calculated in **Appendix I**, Tables 7.1.RME through 7.13.RME, and Tables 7.1.CTE through 7.4.CTE. The risks are summarized in **Appendix I**, Tables 9.1.RME through 9.13.RME and 9.1.CTE through 9.4.CTE. A summary of the RME results is shown in **Table 7-4** and a summary of the CTE results is shown in **Table 7-5**. CTE risks were calculated only when the RME hazard exceeded 1.0 or the RME carcinogenic risk exceeded 10^{-4}.

Current/Future Military Personnel (Table 9.1.RME, Appendix I)

The HHRA assumed that current/future military personnel could be exposed to surface soil in the industrial area through incidental ingestion, dermal contact, and inhalation of particulate emissions from surface soil, and to surface water and sediment in the pond through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.02) is below USEPA's target HI of 1.0. The RME carcinogenic risk (8×10^{-7}) is below USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Current/Future Industrial Worker (Table 9.2.RME, Appendix I)

The RA assumed that a current/future industrial worker could be exposed to surface soil in the industrial area through incidental ingestion, dermal contact, and inhalation of particulate emissions from surface soil. The RME noncarcinogenic hazard (0.02) is below USEPA's target HI of 1.0. The RME carcinogenic risk (5×10^{-6}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Current/Future Maintenance Worker (Table 9.3.RME, Appendix I)

The RA assumed that a current/future maintenance worker could be exposed to surface soil in the industrial and flight line areas through incidental ingestion, dermal contact, and inhalation of particulate emissions from surface soil (industrial area only, since COPCs for flight line area are for air pathway), to surface water and sediment in the pond through incidental ingestion and dermal contact, and to sediment in the drainage ditch through incidental ingestion and dermal contact. The cumulative RME noncarcinogenic hazard (0.02) is below USEPA's target HI of 1.0. The RME carcinogenic risk (7×10^{-6}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Current/Future Adult Trespasser/Visitor (Table 9.4.RME, Appendix I)

The RA assumed that a current/future adult trespasser/visitor could be exposed to surface soil in the industrial and flight line areas through incidental ingestion and dermal contact, to particulate emissions from surface soil in the industrial area through inhalation, and to surface water and sediment in the pond and drainage ditch through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.3) is below USEPA's target HI of 1.0. The RME carcinogenic risk (3×10^{-5}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}. A qualitative evaluation was performed for ingestion of fish from the pond by the current/future adult trespasser/visitor. Iron was the only constituent detected in the pond surface water that exceeded the screening value. The NRWQC for iron (the screening value used) is based on ingestion of the water as a drinking water supply only, which is very conservative for the pond surface water, as it wouldn't be used as a potable water supply. Bioaccumulation of iron in fish to levels of concern for human receptors is not expected to occur.

Current/Future Youth Trespasser/Visitor (Table 9.5.RME, Appendix I)

The RA assumed that a current/future youth trespasser/visitor could be exposed to surface soil in the industrial and flight line areas through incidental ingestion and dermal contact, to particulate emissions from surface soil in the industrial area through inhalation, and to surface water and sediment in the pond and drainage ditch through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.08) is below USEPA's target HI of 1.0. The RME carcinogenic risk (1×10^{-5}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}. A qualitative evaluation was performed for ingestion of fish from the pond by the current/future youth trespasser/visitor. As discussed above for the adult trespasser/visitor, iron was the only constituent detected in the pond surface water that exceeded the screening value. The NRWQC for iron (the screening value used) is based on ingestion of the water as a drinking water supply only, which is very conservative for the pond surface water, as it wouldn't be used as a potable water supply. Bioaccumulation of iron in fish to levels of concern for human receptors is not expected to occur.

Future Construction Worker (Table 9.6.RME, Appendix I)

The RA assumed that a future construction worker could be exposed to surface water and sediment from the pond through incidental ingestion and dermal contact, to sediment from the drainage ditch through incidental ingestion and dermal contact, to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion, dermal contact, and inhalation of particulate emission from soil, and to shallow groundwater in an excavation through dermal contact and inhalation.

The RME noncarcinogenic hazard (1.0) equals USEPA's target HI of 1.0. The RME carcinogenic risk (1×10^{-5}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Future Adult Resident (noncarcinogenic hazard, Tables 9.7.RME and 9.1.CTE, Appendix I)

The RA assumed that a future adult resident could be exposed to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion, dermal contact, and inhalation of particulate emissions, and to groundwater (from any of the data groupings from the three aquifers) used as a potable water supply through ingestion, and dermal contact and inhalation while showering. Carcinogenic risks were not calculated for an adult resident but were calculated for a lifetime resident, following USEPA guidance. The cumulative non-cancer hazard was calculated including only the groundwater exposure unit that resulted in the highest hazard.

The RME noncarcinogenic hazard (2) is above USEPA's target HI of 1.0. Ingestion of groundwater from the surficial aquifer (Groundwater Group 1) is the media and exposure route that contributes the greatest to this hazard. PCE (HI = 0.8), antimony (HI = 0.2), and iron (HI = 0.2) are the main hazard contributors. Although the total HI is above 1.0, there are no individual constituents or target organs with HIs above 1.0. Additionally, the CTE noncarcinogenic hazard (0.8) does not exceed USEPA's target HI. No other groundwater plumes have RME noncarcinogenic HIs above 1.0.

A qualitative evaluation was performed for incidental ingestion of and dermal contact with surface water and sediment from the pond and drainage ditch. It was assumed a resident's exposure to these media would be similar to that of a trespasser/visitor. As the risks associated with exposure to these media by the trespasser/visitor were within acceptable levels, the risks associated with exposure to these media by an adult resident would be within acceptable levels.

Future Child Resident (noncarcinogenic hazard, Tables 9.8.RME and 9.2.CTE, Appendix I)

The RA assumed that a future child resident could be exposed to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion and dermal contact, and inhalation of particulate emissions, and to groundwater (from any of the data groupings from the three aquifers) used as a potable water supply through ingestion, and dermal contact and inhalation while bathing. Carcinogenic risks were not calculated for a child resident but were calculated for a lifetime resident, in accordance with USEPA guidance. The cumulative non-cancer hazard was calculated including only the groundwater exposure unit that resulted in the highest hazard.

The RME noncarcinogenic hazard (6) is above USEPA's target HI of 1.0. Ingestion of groundwater from the surficial aquifer plume (Groundwater Group 1) is the media and exposure route that contributes the greatest to this hazard. The hazard is primarily associated with the PCE in the surficial aquifer (Groundwater Group 1), the only COPC that contributes an HI above 1.0. The CTE noncarcinogenic hazard (3) also exceeds USEPA's target HI. Groundwater from the upper Castle Hayne aquifer (Groundwater Group 4) has an RME noncarcinogenic HI above 1.0 (HI = 2), primarily due to ingestion of cis-1,2-DCE (HI = 1.0).

A qualitative evaluation was performed for incidental ingestion of and dermal contact with surface water and sediment from the pond and drainage ditch. It was assumed a resident's

exposure to these media would be similar to that of a trespasser/visitor. As the risks associated with exposure to these media by the trespasser/visitor were within acceptable levels, the risks associated with exposure to these media by a child resident would be within acceptable levels.

Future Lifetime Resident (carcinogenic risk, Tables 9.9.RME and 9.3.CTE, Appendix I)

The RA assumed that a lifetime resident could be exposed to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion and dermal contact, and inhalation of particulate emissions, and groundwater (from any of the data groupings from the three aquifers) used as a potable water supply through ingestion, and dermal contact and inhalation showering. The cumulative carcinogenic risk was calculated including only the groundwater exposure unit that resulted in the highest risk.

The RME carcinogenic risk (4×10^{-3}) and the CTE carcinogenic risk (9×10^{-4}) are above USEPA's target risk range of 10^{-6} to 10^{-4}. Concentrations of chromium and the cPAHs (primarily benzo[a]pyrene) in the middle Castle Hayne aquifer (Groundwater Group 3) are the primary contributors to estimated risks. The RME carcinogenic risks from all groundwater groupings exceed USEPA's target risk range of 10^{-6} to 10^{-4}. The RME risk drivers from Groundwater Group 1 (surficial aquifer) are PCE and VC, with lesser contributions from TCE, benzene, and chromium. The risk driver from Groundwater Group 2 (middle Castle Hayne aquifer) is PCE. Risk drivers from Groundwater Group 4 (upper Castle Hayne aquifer) are TCE and VC, with a lesser contribution from benzene, and the risk driver from Groundwater Group 5 (upper Castle Hayne aquifer) is TCE, with lesser contributions from PCE and benzene. The RME carcinogenic risk from soil in the flight line area (3.2×10^{-4}) also exceeds USEPA's target risk range of 10^{-6} to 10^{-4}. The risk is primarily associated with ingestion of chromium (1.1×10^{-4}), which contributes the greatest risk from exposure to soil in the flight line area.

Future Military Personnel (Table 9.10.RME Appendix I)

The RA assumed that future military personnel could be exposed to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion and dermal contact, and inhalation of particulate emissions, and to surface water and sediment in the pond through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.1) is below USEPA's target HI of 1.0. The RME carcinogenic risk (3×10^{-6}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Future Industrial Worker (Table 9.11.RME and 9.4.CTE, Appendix I)

The RA assumed that a future industrial worker could be exposed to combined surface and subsurface soil from the industrial and flight line areas through incidental ingestion and dermal contact, and inhalation of particulate emissions, and groundwater (from any of the data groupings from the three aquifers) used as a potable water supply through ingestion. The cumulative non-cancer hazard and carcinogenic risk were calculated including only the groundwater exposure unit that resulted in the highest hazard and risk.

The RME noncarcinogenic hazard (0.6) is below USEPA's target HI of 1.0. The RME carcinogenic risk (4×10^{-4}) exceeds USEPA's target risk range of 1×10^{-6} to 1×10^{-4}. Concentrations of PCE, VC, benzene, TCE, and chromium in the surficial aquifer groundwater (Groundwater Group 1) are the primary contributors to the estimated risks.

The CTE carcinogenic risk (1×10^{-4}) is equal to the upper limit of the acceptable risk range. The RME carcinogenic risk from the middle Castle Hayne aquifer (Groundwater Group 3) (2×10^{-4}) also exceeds USEPA's target risk range of 1×10^{-6} to 1×10^{-4}. The risk from the middle Castle Hayne aquifer is primarily from ingestion of chromium (1×10^{-4}). The CTE carcinogenic risk from Groundwater Group 2 ($5x10^{-5}$) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Future Adult Trespasser/Visitor (Table 9.12.RME, Appendix I)

The RA assumed that a future adult trespasser/visitor could be exposed to combined surface and subsurface soil from the industrial and flight line areas via incidental ingestion and dermal contact, and inhalation of particulate emissions, and to surface water and sediment in the pond through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.04) is below USEPA's target HI of 1.0. The RME carcinogenic risk (4×10^{-6}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

Future Youth Trespasser/Visitor (Table 9.13.RME, Appendix I)

The RA assumed that a future youth trespasser/visitor could be exposed to combined surface and subsurface soil from the industrial and flight line areas via incidental ingestion and dermal contact, and inhalation of particulate emissions, and to surface water and sediment in the pond through incidental ingestion and dermal contact. The RME noncarcinogenic hazard (0.05) is below USEPA's target HI of 1.0. The RME carcinogenic risk (3×10^{-6}) is within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}.

7.2.7 Vapor Intrusion Evaluation

The human health CSM indicates that exposure pathways associated with potable use of groundwater are likely incomplete for current and future human receptor populations at Site 86. However, the absence of potable use exposure pathways does not preclude the potential for VI of volatile compounds detected in groundwater into existing and future buildings. The potential VI pathway at Site 86 is being evaluated in a phased Basewide VI Evaluation performed at MCB CamLej (CH2M HILL, 2009b). The overall objective is to evaluate whether complete or significant exposure pathways exist for VI into existing buildings. This objective is to be was accomplished by:

- Identifying buildings located within 100 feet of groundwater with VOC concentrations above generic VI groundwater screening levels (GWSLs) or NCGWQS.
- Collecting multiple lines of evidence (e.g., building usage/history; pressure differential; soil gas, subslab, indoor, and/or outdoor air samples) for evaluation of the VI pathway.

As part of the basewide *Final Vapor Intrusion Evaluation Work Plan* (CH2M HILL, 2008b), historical shallow groundwater VOC concentrations (collected at Site 86 from 2002 through 2007) were evaluated to identify monitoring wells with exceedances of the site-specific GWSLs or the NCGWQS and the buildings within 100 feet of these monitoring wells. Buildings AS502, AS510, AS515, and AS541 at Site 86 were retained for further evaluation based on this evaluation.

A phased field investigation was conducted to assess the potential for VI at these four buildings. Phase I VI field work was performed in June 2008, including collection of groundwater samples from the water table and co-located soil gas sampling outside of the

four buildings of interest. These exterior water table groundwater samples and co-located soil gas sample locations were generally placed between the buildings and the monitoring wells with exceedances of the site-specific GWSLs. The soil gas samples were collected immediately above the capillary fringe to reduce the uncertainties/variability associated with vertical vapor transport in the vadose zone. However, exterior soil gas samples could not be collected at groundwater sample locations for Buildings AS515 and AS541 due to subsurface saturated conditions encountered between 4 and 7.5 feet bgs at these locations. Additionally, exterior soil gas samples could not be collected at Building AS502 due to the presence of clay from 0 to 6 feet bgs. The evaluation indicated that conditions at Buildings AS510 and AS515 are unlikely to result in significant VI impacts based on results from groundwater samples collected at both buildings and exterior soil gas samples collected at Building AS510.

Following the Phase I VI Evaluation, Buildings AS502 and AS541 were retained for Phase II VI sampling based on (1) exceedances of GWSLs in groundwater within 100 feet of Building AS502 (PCE, TCE, and VC) and Building AS541 (benzene, TCE, and VC); and (2) the refined CSMs for the buildings.

During Phase II VI sampling, one subslab soil gas sample was collected at Building AS502. There were no constituents detected in the subslab soil gas sample at concentrations that exceeded generic Soil Gas Screening Levels (SGSLs) (CH2M HILL, 2009b), suggesting that the observed groundwater concentrations near the southwest corner of Building AS502 are not currently a significant source of TCE in subslab soil gas. Two subslab soil gas samples were collected at Building AS541. There were no VOCs detected in either subslab soil gas sample at concentrations above the generic SGSLs at Building AS541.

Although the TCE groundwater concentrations from the water table near Buildings AS502 and AS541 exceeded the generic GWSL, TCE was not detected in the Phase II subslab soil gas samples at either building. Based on multiple lines of evidence for Site 86 (groundwater flow direction, upgradient concentrations in groundwater, building-specific information, and results from all sampling phases), the Basewide VI Evaluation indicated that groundwater concentrations are unlikely to result in significant future VI impacts at these two buildings. The Basewide VI Evaluation recommended collection of an additional round of subslab soil gas data at Buildings AS502 and AS541 to address temporal variability concerns and confirm that subslab soil gas concentrations are below the base-specific SGSLs.

Subslab soil gas data were collected in February 2010 at Buildings AS502 (two samples) and AS541 (three samples) as part of the Phase III VI sampling investigation. A water table sample was also collected at Building AS541 during Phase III. Results of the Phase III sampling investigation will be presented in the basewide *Phase III Vapor Intrusion Investigation Report,* which is currently in preparation.

Although existing data included in the Basewide VI Evaluation do not indicate significant VI impacts under current site conditions for current site buildings, the potential for future VI in potential future site buildings has not been evaluated. The potential for future VI was evaluated in this HHRA for existing buildings and future construction. The VI pathway was evaluated through a comparison of groundwater concentrations in the historical data (collected at Site 86 between 2002 and 2007) included in the Basewide VI Evaluation and current groundwater data (collected after 2007) included in this ESRI to determine if

groundwater concentrations differed significantly from those used in the Basewide VI Evaluation and if this would affect the VI conclusions.

The current surficial aquifer groundwater data (**Table 7-1**) included in this HHRA were collected from monitoring wells located around currently existing buildings and in downgradient areas, including Building AS508, shown on **Figure 2-3**. The historical groundwater concentrations were compared to current groundwater concentrations (**Table 7-1**) and to the generic GWSLs for each constituent detected in the current groundwater data set (**Table 7-6**). Detected concentrations of benzene, ethylbenzene, PCE, TCE, and VC in the historical data set were above the industrial generic GWSLs. Detected concentrations of benzene, ethylbenzene, TCE, and VC were lower or did not appear to be significantly different in the current groundwater data (**Table 7-6**) compared to the most recent historical data. Concentrations of ethylbenzene detected in the current groundwater data were below the industrial generic GWSL. Current concentrations of benzene, TCE, and VC are lower than historical concentrations, but greater than their respective industrial generic GWSLs. The single detected concentration of PCE in the current groundwater data was greater than the maximum concentration from the historical data and above the industrial generic GWSL.

In December 2009, PCE was detected at a concentration of 190 g/L, which is approximately three times the maximum concentration detected at the same location, IR86-MW10IW (20 to 30 feet bgs screen depth), in May 2006 (the most recent sampling event prior to 2007). Historical PCE groundwater concentrations recorded from monitoring well IR86-MW10IW have ranged between 64 g/L (May 2006) and 290 g/L (January 2004) during sampling events conducted at different times of the year; likely related to seasonal variability. MW10IW is located west and upgradient of Building AS510. Top of water table groundwater samples were collected during the Phase I VI Evaluation (June 2008) from three additional locations around Building AS510 (Figure V4-1, CH2M HILL, 2009b). No constituents were detected at concentrations that exceeded the generic GWSLs at any of the three sample locations. Co-located soil gas samples were collected at two of the three groundwater sample locations; a soil gas sample could not be collected at one location due to shallow groundwater. No constituents were detected at concentrations that exceeded the generic SGSLs at either of the sample locations.

Subslab soil gas sampling at Building AS510 was not proposed for Phase II because there were no GWSL or SGSL exceedances in the Phase I VI samples. The recent results at MW10IW represent existing PCE concentrations in that area; however, there were no detections above generic SGSLs or GWSLs at other locations in the vicinity of Building AS510. Additionally, there were no PCE detections above generic GWSLs in top of the water table grab groundwater samples collected in the vicinity of Building AS502 (Figure V4-5, CH2M HILL 2009c) located to the southwest and cross-gradient of Building AS510. Based on the results of near water table groundwater and soil gas sampling with concentrations below generic screening levels, it is unlikely that the VI pathway would result in VOC concentrations in indoor air above site-specific indoor air screening levels (IASLs) (CH2M HILL, 2009b) at Building AS510 or future buildings in the vicinity of IR86-MW10IW, even considering the more recent groundwater PCE data.

Groundwater data collected in the area of Building AS508 and the northeast grass area (**Figure 2-3**) were evaluated to assess the potential for VI into Building AS508. Groundwater

concentrations in the area of Building AS508 and the northeast grass area were not significantly different from concentrations encountered at other groundwater sample locations at Site 86. Based on the current groundwater data and anticipated construction of the hangar with large bay doors with frequent use and open areas of the building, the VI pathway is unlikely to result in VOC concentrations above the IASLs in indoor air at Building AS508 or future buildings constructed in the vacant area to the east.

In summary, VI is not a current or future exposure pathway of concern based on the following lines of evidence:

- Existing buildings within 100 feet of historical exceedances of the generic GWSLs were further evaluated in the phased Basewide VI Evaluation, and based on results of the Phase I and II groundwater, soil gas, and subslab sampling, VI is not considered a significant pathway of concern.
- A comparison of historical and current groundwater data indicates that there is no significant temporal variability in groundwater concentrations.
- Use and characteristics of current buildings at the site are not anticipated to significantly differ in the future, and future buildings are expected to be similar to existing buildings.

Further evaluation may be needed if site conditions change significantly.

7.2.8 Uncertainty Associated with Human Health Assessment

The risk measures used in HHRAs are not fully probabilistic estimates of risk, but are conditional estimates based on a set of assumptions about exposure and toxicity. Thus it is important to specify the assumptions and uncertainties inherent in the RA to place the risk estimates in proper perspective (USEPA, 1989).

General Uncertainty in Chemical of Potential Concern Selection

The sampling that was conducted at Site 86 generally focused on areas of known or suspected impacts from past site use, based on previous sampling information and observations during previous construction and remediation activities. Therefore, the uncertainty in sampling and the possibility of missing a location impacted by site constituents is expected to be minimal. The uncertainty associated with the data analysis is minimal, as the data were fully validated prior to use in the RA.

The general assumptions used in the COPC selection process were conservative to ensure that true COPCs were not eliminated from the quantitative RA and that the most conservative risk was estimated. RSLs based on residential assumptions were used to select the COPCs for all of the scenarios, including non-residential scenarios.

Uncertainty Associated with Exposure Assessment

Site-related contamination is expected to decrease with time due to naturally occurring attenuation processes (e.g., degradation due to weathering, volatilization, advection, dispersion, and leaching due to infiltrating precipitation). In the interest of conservatism, however, the RA assumed that concentrations would remain constant throughout the exposure period and that these concentrations occur everywhere throughout the site. This assumption likely results in an over-estimation of risk.

Uncertainty in the exposure assessment was generally treated with conservative decision rules and assumptions and, therefore, the uncertainty likely over-estimates actual risk associated with exposure to COPCs. Several exposure pathways evaluated in this HHRA, such as assuming residential homes will be constructed at Site 86 in the future, are hypothetical and are not anticipated to exist in the future. Additionally, it is not likely that the groundwater would ever be used as a potable water supply.

The exposure factors used for the quantitation of exposure were conservative and reflect worst-case or upper-bound assumptions about exposure. The reliability of the values chosen for the exposure factors also contributes substantially to the uncertainty of the resulting risk estimates. Because most of the exposure factors are worst-case or upper-bound assumptions, the resulting risks are worst-case and likely over-estimate the actual risk.

The future soil exposure scenario adds additional conservatism by assuming that the subsurface soil will become surface soil during any future construction activities, and that future receptors may come in contact with materials in the current surface soil and current subsurface soil. During many construction projects, clean fill material such as topsoil is placed over the soil that is disturbed during excavation projects. The topsoil is generally needed to support growth of grass and other landscape plants. This would decrease the probability of future exposure to both the current surface and subsurface soil after construction activities.

Uncertainty Associated with Toxicity Assessment

Uncertainty associated with the noncarcinogenic toxicity factors is addressed in **Appendix I**, Tables 5.1 and 5.2. Several UFs were applied by USEPA to extrapolate dose points from animal studies to humans. These UFs range between 1 and 3,000. Additional modification factors are also used based on the professional judgment of USEPA. As a result, there is a high degree of uncertainty in the noncarcinogenic toxicity criteria, based on the available scientific data for each constituent. The noncarcinogenic toxicity factors are likely an over-estimate of actual toxicity.

The uncertainty associated with CSFs is mostly due to the low dose extrapolation where carcinogenicity at low doses is assumed to be a linear response. This is a conservative assumption, which introduces a high uncertainty into slope factors that are extrapolated from this area of the dose-response curve. The CSFs are based on the assumption that there is no threshold level for carcinogenicity; however, most of the experimental studies indicate the existence of a threshold level. Therefore, CSFs developed by USEPA represent upper bound estimates. Carcinogenic risks generated in this assessment should be regarded as an upper bound estimate on potential carcinogenic risks, rather than an accurate representation of carcinogenic risk. The true carcinogenic risk is likely to be less than the predicted value (USEPA, 1989). Uncertainty is also associated with the application of the MMOA for the cPAHs; this may over-estimate or under-estimate risks. Additionally, the generic ADAFs were used in the MMOA calculations, as no cPAH-specific ADAFs are available.

Additional uncertainty is associated with the prediction of relative sensitivities of different species of animals and the applicability of animal data to humans.

There is a large degree of uncertainty associated with the oral to dermal adjustment factors (based on constituent-specific gastrointestinal absorption factors) used to transform the oral

RfDs and CSFs based on administered doses to dermal RfDs and CSFs based on absorbed doses. It is not known if the adjustment factor results in an under-estimation or over-estimation of the actual toxicity associated with dermal exposure.

Uncertainty in Risk Characterization

The uncertainties identified in each component of this RA ultimately contribute to uncertainty in risk characterization. The addition of risks and HIs across pathways and chemicals contributes to uncertainty based on interactions among chemicals such as additivity, synergism, and potentiation, and as well as the susceptibility of exposed receptors. The simple assumption of additivity used for this site may or may not be accurate and may over- or under-estimate risk; however, a better alternative is not available at this time.

7.3 Human Health Risk Summary

Human health risks were evaluated for exposure to Site 86 using the following scenarios:

- Surface soil in the industrial area for current military personnel, industrial and maintenance workers, and trespassers/visitors (adult and youth)
- Surface soil in the flight line area for current maintenance workers and trespassers/visitors (adult and youth)
- Surface water and sediment in the pond for current military personnel, maintenance workers, and trespasser/visitors (adult and youth)
- Surface water and sediment in the drainage ditch for current maintenance workers and trespassers/visitors (adult and youth)
- Surface water in the pond for future construction workers
- Sediment in the pond and drainage ditch for future construction workers
- Combined surface and subsurface soil in the industrial and flight line areas for future adult and child residents, construction workers, military personnel, industrial workers, and trespasser/visitors (adult and youth)
- Surficial aquifer groundwater for future adult and child residents, industrial workers, and construction workers
- Upper and middle Castle Hayne aquifer groundwater for future adult and child residents, and industrial workers

Table 7-4 and Tables 9.1.RME through 9.13.RME in **Appendix I** summarize the RME cancer risks and HIs. Table 7-5 and Tables 9.1.CTE through 9.5.CTE in **Appendix I** summarize the CTE cancer risks and HIs. Tables 10.1.RME through 10.5.RME and Tables 10.1.CTE through 10.3.CTE show only the constituents that contributed HIs above 0.1 to total cumulative receptor HIs greater than 1.0 or carcinogenic risks greater than 10^{-6} to total cumulative receptor carcinogenic risks greater than 10^{-4}.

For current land use, Site 86 does not pose unacceptable health risks to any of the receptors evaluated in this HHRA. Contact with surface soil, surface water, and sediment would

result in noncarcinogenic hazards and carcinogenic risks below or within USEPA target levels.

Potential future contact with the western pond and drainage ditch surface water and sediment would result in noncarcinogenic hazards and carcinogenic risks below or within USEPA target levels. Potential future contact with surface and subsurface soil in the industrial area by any potential receptors would result in risks and hazards below or within USEPA's acceptable risk range and hazard level. Potential future contact with surface and subsurface soil from the flight line area by future military personnel, construction workers, industrial workers, adult and child residents, and trespasser/visitors would result in risk and hazards below or within USEPA's acceptable risk range and hazard level. Potential future contact with the surface and subsurface soil from the flight line area by future lifetime residents could exceed USEPA's acceptable risk level. Potential future contact with surficial aquifer groundwater by future construction workers would result in risks and hazards below or within USEPA's acceptable risk range and hazard level.

Potential future contact with surficial aquifer groundwater (Groundwater Group 1) by future residents and industrial workers may result in risk or hazards above USEPA's acceptable risk range and hazard levels. The noncarcinogenic hazard for the future resident is primarily associated with (2) ingestion of PCE. The risk is primarily associated with ingestion of PCE and VC, with a lesser contribution from TCE, chromium, and benzene and (2) dermal contact with PCE, with a lesser contribution from VC and TCE. Potential future contact with groundwater from the middle Castle Hayne aquifer (Groundwater Group 2) by future receptors would result in risks and hazards below or within USEPA's acceptable risk range and hazard level. Potential future contact with groundwater from the middle Castle Hayne aquifer (Groundwater Group 3) by future adult and child resident receptors would result in risks and hazards below or within USEPA's acceptable risk range and hazard level; however, potential future contact by lifetime residents and industrial workers may result in risks and hazards exceeding USEPA's acceptable levels. The carcinogenic risk for the future lifetime resident is primarily associated with ingestion of chromium and dermal contact with benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The carcinogenic risk for the future industrial worker is primarily associated with ingestion of chromium, with lesser contributions from dibenz(a,h)anthracene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene. Potential future contact with groundwater from the upper Castle Hayne aquifer (Groundwater Group 4) by future adult residents and industrial workers would result in risks and hazards below or within USEPA's acceptable risk range and hazard level; however, potential future contact with groundwater from the upper Castle Hayne aquifer (Groundwater Group 4) by a future resident child and lifetime resident would result in unacceptable risks and hazards. Hazards to the future child are associated with ingestion of cis-1,2-DCE and risks to the future lifetime resident are associated with VC, TCE, and benzene (through ingestion, dermal contact, and inhalation). Potential future contact with groundwater from the upper Castle Hayne aquifer (Groundwater Group 5) by future receptors would result in risks and hazards below or within USEPA's acceptable risk range and hazard level.

The residential land use scenario evaluated in this assessment is very conservative, since Site 86 is not currently residential and future land use is unlikely to change. Additionally, groundwater at Site 86 is not a current potable source and is unlikely to be used for potable

purposes in the future. The risk characterization presented in this assessment provides upper bound risks for the residential scenario exposure to groundwater, though residential is not a current or probable future land use.

An evaluation of the potential VI pathway at Site 86 was conducted using groundwater data and soil gas and subslab data collected in support of a Basewide VI Evaluation. Based on a review of the existing data and lines of evidence, VI is not a current or future exposure pathway of concern.

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Surface Soil				
Industrial Area Surface Soil	10/07/2009	IR86-IS100	IR86-SS100-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS104	IR86-SS104-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS105	IR86-SS105-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS106	IR86-SS106-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS107	IR86-SS107-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/08/2009	IR86-IS109	IR86-SS109-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS01	IR86-SS01-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS02	IR86-SS02-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS03	IR86-SS03-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS04	IR86-SS04-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS05	IR86-SS05-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS05	IR86-SS05D-07D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS06	IR86-SS06-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS07	IR86-SS07-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS08	IR86-SS08-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS09	IR86-SS09-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS10	IR86-SS10-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
Flight Line Area Surface Soil	10/09/2009	IR86-IS101	IR86-SS101-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS108	IR86-SS108-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS110	IR86-SS110-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS111	IR86-SS111-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS112	IR86-SS112-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS113	IR86-SS113-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/13/2009	IR86-IS114	IR86-SS114-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/13/2009	IR86-IS114	IR86-SS114D-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Soil*				
Industrial Area Soil*	10/07/2009	IR86-IS100	IR86-SS100-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/08/2009	IR86-IS100	IR86-SB100-06-07-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS104	IR86-SS104-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS104	IR86-SB104-08-09-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS105	IR86-SB105-05-06-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS105	IR86-SS105-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS106	IR86-SS106-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS106	IR86-SB106-07-08-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS107	IR86-SS107-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/10/2009	IR86-IS107	IR86-SB107-16-17-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS107	IR86-SB107-07-08-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS107	IR86-SB107D-07-08-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/06/2009	IR86-IS109	IR86-SB109-07-08-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/08/2009	IR86-IS109	IR86-SS109-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS01	IR86-SS01-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS02	IR86-SS02-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS03	IR86-SS03-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS04	IR86-SS04-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS05	IR86-SS05-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS05	IR86-SS05D-07D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS06	IR86-SS06-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS07	IR86-SS07-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS08	IR86-SS08-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS09	IR86-SS09-07D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/07/2007	IR86-SS10	IR86-SS10-07D	VOCs, SVOCs, Pesticides/PCBs, Metals

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Flight Line Area Soil*	10/08/2009	IR86-IS101	IR86-SB101-06-07-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS101	IR86-SS101-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS102	IR86-SS102-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS102	IR86-SB102-07-08-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS103	IR86-SS103-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS103	IR86-SS103D-0-0_5-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/09/2009	IR86-IS103	IR86-SB103-08-09-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS108	IR86-SS108-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS108	IR86-SB108-05-06-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS110	IR86-SS110-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS110	IR86-SB110-06-07-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/11/2009	IR86-IS111	IR86-SS111-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS111	IR86-SB111-01-02-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS112	IR86-SS112-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS112	IR86-SB112-05-06-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS113	IR86-SS113-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/12/2009	IR86-IS113	IR86-SB113-02-03-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/13/2009	IR86-IS114	IR86-SS114-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/13/2009	IR86-IS114	IR86-SS114D-0-0_5-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	10/13/2009	IR86-IS114	IR86-SB114-05-06-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
Surface Water				
Western Pond	6/11/2008	IR86-SW01	IR86-SW01-08B	VOCs, SVOCs, Pesticides/PCBs, Metals
	6/11/2008	IR86-SW02	IR86-SW02-08B	VOCs, SVOCs, Pesticides/PCBs, Metals
	6/11/2008	IR86-SW02	IR86-SW02D-08B[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
Drainage Ditch	11/08/2009	IR86-SW105	IR86-SW105-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW105	IR86-SW105D-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW106	IR86-SW106-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW108	IR86-SW108-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW110	IR86-SW110-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW112	IR86-SW112-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals
	11/08/2009	IR86-SW113	IR86-SW113-09D	VOCs, SVOCs, Pesticides/PCBs, Metals, Dissolved Metals

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Sediment				
Western Pond	6/11/2008	IR86-SD01	IR86-SD01-08B	VOCs, SVOCs, Pesticides/PCBs, Metals
	6/11/2008	IR86-SD02	IR86-SD02-08B	VOCs, SVOCs, Pesticides/PCBs, Metals
	6/11/2008	IR86-SD02	IR86-SD02D-08B[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
Drainage Ditch	11/08/2009	IR86-SD105	IR86-SD105-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	3/16/2010	IR86-SD105	IR86-SD105-10A	Pesticides
	11/08/2009	IR86-SD106	IR86-SD106-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	3/16/2010	IR86-SD106	IR86-SD106-10A	Pesticides
	11/10/2009	IR86-SD107	IR86-SD107-0-0_5-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	11/10/2009	IR86-SD107	IR86-SD107D-0-0_5-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	11/08/2009	IR86-SD108	IR86-SD108-0-0_5-09D	VOCs, SVOCs, PCBs, Metals
	3/16/2010	IR86-SD108	IR86-SD108-10A	Pesticides
	11/08/2009	IR86-SD109	IR86-SD109-0-0_5-09D	VOCs, SVOCs, PCBs, Metals
	3/16/2010	IR86-SD109	IR86-SD109-10A	Pesticides
	11/08/2009	IR86-SD110	IR86-SD110-0-0_5-09D	VOCs, SVOCs, PCBs, Metals
	3/16/2010	IR86-SD110	IR86-SD110-10A	Pesticides
	11/08/2009	IR86-SD112	IR86-SD112-0-0_5-09D	VOCs, SVOCs, PCBs, Metals
	3/16/2010	IR86-SD112	IR86-SD112-10A	Pesticides
	3/16/2010	IR86-SD112	IR86-SD112-10A[1]	Pesticides
	11/08/2009	IR86-SD113	IR86-SD113-0-0_5-09D	VOCs, SVOCs, PCBs, Metals
	3/16/2010	IR86-SD113	IR86-SD113-10A	Pesticides

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Groundwater				
Surficial Aquifer	12/14/2009	IR86-MW03	IR86-GW03-09D	VOCs
	12/11/2009	IR86-MW09	IR86-GW09-09D[2]	VOCs
	12/14/2009	IR86-MW10IW	IR86-GW10IW-09D[2]	VOCs
	12/10/2009	IR86-MW27IW	IR86-GW27IW-09D[2]	VOCs
	12/10/2009	IR86-MW38IWA	IR86-GW38IWA-09D	VOCs
	1/13/2010	IR86-MW39	IR86-GW39-10A	VOCs, Iron, Manganese
	12/15/2009	IR86-MW40	IR86-GW40-09D	VOCs
	12/15/2009	IR86-MW40	IR86-GW40D-09D[1]	VOCs
	12/07/2009	IR86-MW41	IR86-GW41-09D	VOCs
	12/09/2009	IR86-MW47	IR86-GW47-09D[2]	VOCs
	12/13/2009	IR86-MW48	IR86-GW48-09D[2]	VOCs
	12/09/2009	IR86-MW52	IR86-GW52-09D	VOCs
	12/08/2009	IR86-MW53	IR86-GW53-09D	VOCs
	12/16/2009	IR86-MW56	IR86-GW56-09D[2]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/16/2009	IR86-MW58	IR86-GW58-09D[2]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/12/2009	IR86-MW59	IR86-GW59-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/12/2009	IR86-MW59	IR86-GW59D-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/18/2009	IR86-MW60	IR86-GW60-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/12/2009	IR86-MW61	IR86-GW61-09D[2]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/14/2009	IR86-MW62	IR86-GW62-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/14/2009	IR86-MW62	IR86-GW62D-09D[1]	VOCs, SVOCs, Pesticides/PCBs, Metals
	1/13/2010	IR86-MW63	IR86-GW63-10A[2]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/16/2009	IR86-MW64	IR86-GW64-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/10/2009	SWMU318-MW01	SWMU318-GW01-09D	VOCs
	12/10/2009	SWMU318-MW01	SWMU318-GW01D-09D[1]	VOCs
	12/15/2009	SWMU318-MW05	SWMU318-GW05-09D	VOCs
	12/08/2009	SWMU318-MW08	SWMU318-GW08-09D	VOCs
	12/09/2009	USTAS410S-MW02	USTAS410S-GW02-09D	VOCs

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Middle Castle Hayne Aquifer	1/14/2010	IR86-MW15DW	IR86-GW15DW-10A	VOCs
	12/15/2009	IR86-MW16DW	IR86-GW16DW-09D	VOCs
	12/11/2009	IR86-MW17DW	IR86-GW17DW-09D	VOCs
	12/15/2009	IR86-MW18DW	IR86-GW18DW-09D	VOCs
	12/15/2009	IR86-MW18DW	IR86-GW18DWD-09D[1]	VOCs
	12/14/2009	IR86-MW19DW	IR86-GW19DW-09D[3]	VOCs
	12/18/2009	IR86-MW31DW	IR86-GW31DW-09D	VOCs
	12/13/2009	IR86-MW42DW	IR86-GW42DW-09D	VOCs
	12/13/2009	IR86-MW44DW	IR86-GW44DW-09D	VOCs
	1/15/2010	IR86-MW45DW	IR86-GW45DW-10A	VOCs
	12/17/2009	IR86-MW49DW	IR86-GW49DW-09D	VOCs
	1/15/2010	IR86-MW51DW	IR86-GW51DW-10A	VOCs
	1/15/2010	IR86-MW51DW	IR86-GW51DWD-10A[1]	VOCs
	1/14/2010	IR86-MW56DW	IR86-GW56DW-10A	VOCs,
	1/13/2010	IR86-MW58DW	IR86-GW58DW-10A	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/18/2009	IR86-MW59DW	IR86-GW59DW-09D[4]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/18/2009	IR86-MW61DW	IR86-GW61DW-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
Upper Castle Hayne Aquifer	12/14/2009	IR86-MW15IW	IR86-GW15IW-09D5[5]	VOCs
	12/15/2009	IR86-MW16IW	IR86-GW16IW-09D[6]	VOCs
	12/11/2009	IR86-MW17IW	IR86-GW17IW-09D	VOCs
	12/13/2009	IR86-MW22IW	IR86-GW22IW-09D[5]	VOCs
	12/15/2009	IR86-MW29IW	IR86-GW29IW-09D[6]	VOCs
	12/11/2009	IR86-MW30IW	IR86-GW30IW-09D[5]	VOCs
	12/16/2009	IR86-MW31IW	IR86-GW31IW-09D[6]	VOCs
	12/17/2009	IR86-MW34IW	IR86-GW34IW-09D[6]	VOCs

TABLE 7-1
Samples Used in the Risk Assessment
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Medium	Date of Sampling	Sample Location	Sample	Parameters
Upper Castle Hayne Aquifer (continued)	12/10/2009	IR86-MW38IWB	IR86-GW38IWB-09D[6]	VOCs
	12/10/2009	IR86-MW38IWC	IR86-GW38IWC-09D[6]	VOCs
	12/12/2009	IR86-MW42IW	IR86-GW42IW-09D[5]	VOCs
	12/13/2009	IR86-MW43IW	IR86-GW43IW-09D	VOCs
	12/12/2009	IR86-MW44IW	IR86-GW44IW-09D[5]	VOCs
	12/07/2009	IR86-MW46IW	IR86-GW46IW-09D	VOCs
	12/09/2009	IR86-MW47IW	IR86-GW47IW-09D	VOCs
	12/16/2009	IR86-MW48IW	IR86-GW48IW-09D[5]	VOCs
	12/14/2009	IR86-MW54IW	IR86-GW54IW-09D[5]	VOCs
	12/13/2009	IR86-MW55IW	IR86-GW55IW-09D[5]	VOCs
	12/13/2009	IR86-MW55IW	IR86-GW55IWD-09D[1, 5]	VOCs
	12/16/2009	IR86-MW58IW	IR86-GW58IW-09D[5]	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/12/2009	IR86-MW59IW	IR86-GW59IW-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/17/2009	IR86-MW60IW	IR86-GW60IW-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/12/2009	IR86-MW61IW	IR86-GW61IW-09D	VOCs, SVOCs, Pesticides/PCBs, Metals
	12/17/2009	IR86-MW63IW	IR86-GW63IW-09D	VOCs, SVOCs, Pesticides/PCBs, Metals

Notes:
[1] Duplicate sample of sample listed above
[2] Groundwater Group 1
[3] Groundwater Group 2
[4] Groundwater Group 3
[5] Groundwater Group 4
[6] Groundwater Group 5
PCBs - Polychlorinated biphenyl
SVOCs - Semi-volatile organic compounds
Soil* - surface and subsurface soil
VOCs - Volatile organic compounds

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC

TABLE 7-2
Summary of COPCs
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Soil		Surface Water	Sediment	Groundwater	
Industrial Area	**Flight Line Area**	**Western Pond**	**Western Pond**	**Group 1 - Surficial**	**Group 3 - Middle Castle Hayne**
Surface Soil	**Surface Soil**	Iron	Benzo(a)anthracene[1]	1,1-Dichloroethane	Chloroform
Benzo(a)anthracene	Benzo(a)anthracene		Benzo(a)pyrene	2-Hexanone	Benzo(a)pyrene
Benzo(a)pyrene	Benzo(a)pyrene	**Drainage Ditch**	Benzo(b)fluoranthene[1]	Benzene	Benzo(b)fluoranthene
Benzo(b)fluoranthene	Benzo(b)fluoranthene	Benzo(a)anthracene	Benzo(k)fluoranthene[1]	Chloroform	Benzo(k)fluoranthene
Benzo(k)fluoranthene[1]	Benzo(k)fluoranthene[1]	Benzo(a)pyrene	Chrysene[1]	cis-1,2-Dichloroethene	Dibenz(a,h)anthracene
Chrysene[1]	Chrysene[1]	Benzo(b)fluoranthene	Dibenz(a,h)anthracene[1]	Dichlorodifluoromethane (Freon-12)	Indeno(1,2,3-cd)pyrene
Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene[1]	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene[1]	Ethylbenzene	Chromium
Aluminum	Indeno(1,2,3-cd)pyrene	Naphthalene	Arsenic	Tetrachloroethene	
Arsenic	Aluminum	Aluminum	Chromium	Trichloroethene	**Air Group 3 - Middle Castle Hayne**
Chromium	Arsenic	Iron	Iron	Vinyl chloride	Chloroform
Cobalt	Chromium	Manganese		Naphthalene	
		Vanadium	**Drainage Ditch**	Antimony	**Group 4 - Upper Castle Hayne**
Surface Soil - Air	**Surface Soil and Subsurface Soil**		Benzo(a)anthracene	Iron	Benzene
Chromium	Benzo(a)anthracene		Benzo(a)pyrene		cis-1,2-Dichloroethene
	Benzo(a)pyrene		Benzo(b)fluoranthene	**Air Group 1 - Surficial**	trans-1,2-Dichloroethene
Surface Soil and Subsurface Soil	Benzo(b)fluoranthene		Benzo(k)fluoranthene	1,1-Dichloroethane	Trichloroethene
Benzo(a)anthracene	Benzo(k)fluoranthene[1]		Chrysene[1]	2-Hexanone	Vinyl chloride
Benzo(a)pyrene	Chrysene[1]		Dibenz(a,h)anthracene	Benzene	
Benzo(b)fluoranthene	Dibenz(a,h)anthracene[1]		Indeno(1,2,3-cd)pyrene	Chloroform	**Air Group 4 - Upper Castle Hayne**
Benzo(k)fluoranthene[1]	Indeno(1,2,3-cd)pyrene		Aluminum	cis-1,2-Dichloroethene	Benzene
Chrysene[1]	Aluminum		Antimony	Dichlorodifluoromethane (Freon-12)	cis-1,2-Dichloroethene
Indeno(1,2,3-cd)pyrene	Arsenic		Arsenic	Ethylbenzene	trans-1,2-Dichloroethene
Aluminum	Chromium		Cadmium	Tetrachloroethene	Trichloroethene
Arsenic	Cobalt		Chromium	Trichloroethene	Vinyl chloride
Chromium	Iron		Cobalt	Vinyl chloride	
Cobalt	Vanadium		Iron	Naphthalene	**Group 5 - Upper Castle Hayne**
Iron			Vanadium		Benzene
	Soil - Air			**Group 2 - Middle Castle Hayne**	cis-1,2-Dichloroethene
Soil - Air	Chromium			Tetrachloroethene	Tetrachloroethene
Chromium					trans-1,2-Dichloroethene
				Air Group 2 - Middle Castle Hayne	Trichloroethene
				Tetrachloroethene	Vinyl chloride
					Air Group 5 - Upper Castle Hayne
					Benzene
					cis-1,2-Dichloroethene
					Tetrachloroethene
					trans-1,2-Dichloroethene
					Trichloroethene
					Vinyl chloride

Notes:
[1] Chemical not identified as COPC based on maximum concentration,
but identified as a COPC since chemical from same class (carcinogenic PAH) identified as a COPC.

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC

TABLE 7-3
Potentially Complete Human Health Exposure Pathways
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Land Use	Exposure Media	Potentially Exposed Populations	Exposure Route (Human Health)	Pathway Selected for Evaluation	Rationale
Current					
Industrial	Surface soil in Industrial Area	Military Personnel, Maintenance Worker, Industrial Worker	Ingestion, Dermal Contact, and Inhalation	Yes	Workers could ingest, inhale and/or have dermal contact with surface soil at site.
Industrial	Surface soil in Flight Line Area	Maintenance Worker	Ingestion, Dermal Contact, and Inhalation	Yes	Workers could ingest, inhale and/or have dermal contact with surface soil at site.
Industrial	Surface soil in Industrial and Flight Line Areas; Surface Water in Pond; Surface Water in Drainage Ditch	Trespasser/Visitor - Adults, Youth and Child	Ingestion, Dermal Contact, and Inhalation	Yes	Access to site unlimited for people on base, trespasser could ingest, inhale and/or have dermal contact with surface soil at site. Trespasser could contact surface water in pond and/or drainage ditch.
Industrial	Surface Water in Pond	Military Personnel, Maintenance Worker	Ingestion and Dermal Contact	Yes	Personnel may access site for work related activities, and while at site may contact surface water in pond.
Industrial	Sediment in Pond	Military Personnel, Maintenance Worker	Ingestion and Dermal Contact	Yes	Personnel may access site for work related activities, and while at site may contact sediment in pond.
Industrial	Sediment in Drainage Ditch	Maintenance Worker	Ingestion and Dermal Contact	Yes	Personnel may access site for work related activities, and while at site may contact sediment in drainage ditch.
Residential/Industrial	Sediment in Pond and Drainage Ditch	Trespasser/Visitor - Adults, Youth and Child	Ingestion and Dermal Contact	Yes	Access to site unlimited for people on base; trespasser/visitor could contact site sediment.
Future					
Residential/Industrial	Surface Water in Pond	Construction Worker	Ingestion and Dermal Contact	Yes	Construction workers could contact surface water in pond during construction activities.
Residential/Industrial	Sediment in Pond and Drainage Ditch	Construction Worker	Ingestion and Dermal Contact	Yes	Construction workers could contact sediment during construction activities.
Residential	Surface and Subsurface soil, Groundwater	Residents - Adults and Children	Ingestion, Dermal Contact, and Inhalation	Yes	Although unlikely, if site used for future residential development, residents could ingest, inhale or have dermal contact with surface and subsurface soil.
Industrial	Surface and Subsurface Soil	Military Personnel	Ingestion, Dermal Contact, and Inhalation	Yes	If future site use is industrial, future workers could ingest, inhale or have dermal contact with surface and subsurface soil.
Industrial	Surface and Subsurface soil, Groundwater	Construction Worker, Industrial Worker	Ingestion, Dermal Contact, and Inhalation	Yes	If future site use is industrial, future workers could ingest, inhale or have dermal contact with surface and subsurface soil. Future workers could ingest groundwater.
Trespasser/Visitor	Surface and Subsurface soil	Trespasser/Visitor - Adults, Youth and Child	Ingestion, Dermal Contact, and Inhalation	Yes	Access to site unlimited for people on base, trespasser/visitor could ingest, inhale or have dermal contact with surface and subsurface soils onsite.

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Current/Future Military Personnel	Surface Soil Industrial Area	Ingestion	6.E-07				0.02	
		Dermal Contact	1.E-07				0.002	
		Inhalation	1.E-08				2E-05	
		Total	7.E-07				0.02	
	Surface Water Western Pond	Ingestion	0.E+00				1E-05	
		Dermal Contact	0.E+00				5E-06	
		Inhalation	NA				NA	
		Total	0.E+00				2E-05	
	Sediment Western Pond	Ingestion	3.E-08				0.001	
		Dermal Contact	1.E-08				0.001	
		Inhalation	NA				NA	
		Total	4.E-08				0.002	
	All Media	Total	8.E-07				0.03	
Current/Future Industrial Worker	Surface Soil Industrial Area	Ingestion	4.E-06			Chromium	0.02	
		Dermal Contact	7.E-07				0.002	
		Inhalation	6.E-07				0.0002	
		Total	5.E-06			Chromium	0.02	
	All Media	Total	5.E-06				0.02	
Current/Future Maintenance Worker	Surface Soil Industrial Area	Ingestion	8.E-07				0.004	
		Dermal Contact	2.E-07				0.0005	
		Inhalation	1.E-08				4E-06	
		Total	1.E-06				0.005	
	Surface Soil Flight Line Area	Ingestion	7.E-07				0.004	
		Dermal Contact	2.E-07				0.0004	
		Inhalation	NA				NA	
		Total	9.E-07				0.004	
	Surface Water Western Pond	Ingestion	0.E+00				3E-05	
		Dermal Contact	0.E+00				2E-05	
		Inhalation	NA				NA	
		Total	0.E+00				5E-05	
	Sediment Western Pond	Ingestion	3.E-07				0.002	
		Dermal Contact	9.E-08				0.001	
		Inhalation	NA				NA	
		Total	4.E-07				0.003	
	Sediment Drainage Ditch	Ingestion	2.E-06				0.009	
		Dermal Contact	3.E-06			Benzo(a)pyrene	0.00	
		Inhalation	NA				NA	
		Total	5.E-06			Benzo(a)pyrene	0.01	
	All Media	Total	7.E-06				0.02	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Current/Future Trespasser/Visitor Adult	Surface Soil Industrial Area	Ingestion	8.E-07				0.004	
		Dermal Contact	9.E-08				0.0003	
		Inhalation	3.E-09				1E-06	
		Total	8.E-07				0.005	
	Surface Soil Flight Line Area	Ingestion	7.E-07				0.004	
		Dermal Contact	9.E-08				0.0002	
		Inhalation	NA				NA	
		Total	8.E-07				0.004	
	Surface Water Western Pond	Ingestion	0.E+00				4E-05	
		Dermal Contact	0.E+00				2E-05	
		Inhalation	NA				NA	
		Total	0.E+00				7E-05	
	Sediment Western Pond	Ingestion	8.E-07				0.005	
		Dermal Contact	4.E-07				0.003	
		Inhalation	NA				NA	
		Total	1.E-06				0.008	
	Sediment Drainage Ditch	Ingestion	4.E-06			Benzo(a)pyrene, Chromium	0.02	
		Dermal Contact	1.E-05			Benzo(a)pyrene, Benzo(b)fluoranthene	0.01	
		Inhalation	NA				NA	
		Total	2.E-05		Benzo(a)pyrene	Benzo(b)fluoranthene, Arsenic, Chromium	0.03	
	Surface Water Drainage Ditch	Ingestion	7.E-09				0.3	
		Dermal Contact	8.E-06			Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	0.01	
		Inhalation	NA				NA	
		Total	8.E-06			Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	0.3	
	All Media	Total	3.E-05				0.3	
Current/Future Trespasser/Visitor Youth	Surface Soil Industrial Area	Ingestion	5.E-07				0.01	
		Dermal Contact	2.E-08				0.0002	
		Inhalation	1.E-09				1E-06	
		Total	5.E-07				0.007	
	Surface Soil Flight Line Area	Ingestion	4.E-07				0.006	
		Dermal Contact	2.E-08				0.0001	
		Inhalation	NA				NA	
		Total	5.E-07				0.006	
	Surface Water Western Pond	Ingestion	0.E+00				6E-05	
		Dermal Contact	0.E+00				3E-06	
		Inhalation	NA				NA	
		Total	0.E+00				7E-05	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Current/Future Trespasser/Visitor Youth (continued)	Sediment Western Pond	Ingestion	5.E-07				0.008	
		Dermal Contact	6.E-08				0.001	
		Inhalation	NA				NA	
		Total	6.E-07				0.009	
	Sediment Drainage Ditch	Ingestion	3.E-06			Benzo(a)pyrene	0.04	
		Dermal Contact	2.E-06			Benzo(a)pyrene	0.004	
		Inhalation	NA				NA	
		Total	5.E-06				0.04	
	Surface Water Drainage Ditch	Ingestion	4.E-09				0.004	
		Dermal Contact	3.E-06				0.02	
		Inhalation	NA				NA	
		Total	3.E-06				0.02	
	All Media	Total	1.E-05			Benzo(a)pyrene, Benzo(b)fluoranthene	0.08	
Future Construction Worker	Surface Water Western Pond	Ingestion	0.E+00				0.000	
		Dermal Contact	0.E+00				0.0004	
		Inhalation	NA				NA	
		Total	0.E+00				0.0005	
	Sediment Western Pond	Ingestion	1.E-08				0.002	
		Dermal Contact	3.E-09				0.0005	
		Inhalation	NA				NA	
		Total	2.E-08				0.002	
	Sediment Drainage Ditch	Ingestion	7.E-08				0.007	
		Dermal Contact	1.E-07				0.003	
		Inhalation	NA				NA	
		Total	2.E-07				0.01	
	Soil* Industrial Area	Ingestion	7.E-07				0.2	
		Dermal Contact	1.E-08				0.001	
		Inhalation	3.E-09				2.E-05	
		Total	7.E-07				0.2	
	Soil* Flight Line Area	Ingestion	2.E-06			Arsenic, Chromium	0.7	
		Dermal Contact	5.E-08				0.01	
		Inhalation	2.E-12				6E-05	
		Total	2.E-06			Arsenic, Chromium	0.7	
	Groundwater Surficial Aquifer (Group 1)	Ingestion	NA				NA	
		Dermal Contact	1.E-06			Trichloroethene	0.03	
		Inhalation	7.E-06			2-Hexanone, cis-1,2-dichloroethene	5E-04	
		Total	8.E-06			Trichloroethene, 2-Hexanone, cis-1,2-dichloroethene	0.03	
	All Media	Total	1.E-05				1	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Adult Resident	Soil*	Ingestion	NA				0.04	
	Industrial Area	Dermal Contact	NA				0.002	
		Inhalation	NA				0.0001	
		Total	NA				0.04	
	Soil*	Ingestion	NA				0.1	
	Flight Line Area	Dermal Contact	NA				0.0	
		Inhalation	NA				2E-04	
		Total	NA				0.2	
	Groundwater	Ingestion	NA				1	
	Surficial Aquifer (Group 1)	Dermal Contact	NA				0.3	
		Inhalation	NA				0.05	
		Total	NA				2	
	Groundwater	Ingestion	NA				0.007	
	Surficial Aquifer (Group 2)	Dermal Contact	NA				0.004	
		Inhalation	NA				0.0004	
		Total	NA				0.01	
	Groundwater	Ingestion	NA				0.7	
	Surficial Aquifer (Group 3)	Dermal Contact	NA				0.29	
		Inhalation	NA				0.0002	
		Total	NA				1.0	
	Groundwater	Ingestion	NA				0.7	
	Surficial Aquifer (Group 4)	Dermal Contact	NA				0.1	
		Inhalation	NA				0.02	
		Total	NA				1	
	Groundwater	Ingestion	NA				0.1	
	Surficial Aquifer (Group 5)	Dermal Contact	NA				0.01	
		Inhalation	NA				0.003	
		Total	NA				0.1	
	All Media[1]	Total	NA				2	
Future Child Resident	Soil*	Ingestion	NA				0.4	
	Industrial Area	Dermal Contact	NA				0.01	
		Inhalation	NA				0.0001	
		Total	NA				0.4	
	Soil*	Ingestion	NA				1	
	Flight Line Area	Dermal Contact	NA				0.1	
		Inhalation	NA				2E-04	
		Total	NA				1	
	Groundwater	Ingestion	NA				3	Tetrachloroethene
	Surficial Aquifer (Group 1)	Dermal Contact	NA				0.8	
		Inhalation	NA				0.1	
		Total	NA				4	Tetrachloroethene

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Child Resident (continued)	Groundwater Surficial Aquifer (Group 2)	Ingestion	NA				0.02	
		Dermal Contact	NA				0.009	
		Inhalation	NA				0.001	
		Total	NA				0.03	
	Groundwater Surficial Aquifer (Group 3)	Ingestion	NA				0.1	Chromium
		Dermal Contact	NA				0.9	
		Inhalation	NA				0.0005	
		Total	NA				1	Chromium
	Groundwater Surficial Aquifer (Group 4)	Ingestion	NA				2	cis-1,2-Dichloroethene
		Dermal Contact	NA				0.2	
		Inhalation	NA				0.1	
		Total	NA				2	cis-1,2-Dichloroethene
	Groundwater Surficial Aquifer (Group 5)	Ingestion	NA				0.2	
		Dermal Contact	NA				0.02	
		Inhalation	NA				0.008	
		Total	NA				0.2	
	All Media[1]	Total	NA				6	
Future Child/Adult Resident	Soil* Industrial Area	Ingestion	6.E-05		Chromium	Benzo(a)pyrene, Arsenic	NA	
		Dermal Contact	1.E-05			Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	NA	
		Inhalation	2.E-11				NA	
		Total	7.E-05		Benzo(a)pyrene, Chromium	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	NA	
	Soil* Flight Line Area	Ingestion	1.E-04		Arsenic, Chromium	Benzo(a)pyrene	NA	
		Dermal Contact	1.E-05			Benzo(a)pyrene, Arsenic	NA	
		Inhalation	4.E-11				NA	
		Total	2.E-04		Benzo(a)pyrene, Arsenic, Chromium	Benzo(b)fluoranthene	NA	
	Groundwater Surficial Aquifer (Group 1)	Ingestion	2.E-03	Tetrachloroethene, Vinyl Chloride	Trichloroethene, Chromium	Benzene	NA	
		Dermal Contact	9.E-04	Tetrachloroethene	Vinyl chloride	Trichloroethene	NA	
		Inhalation	3.E-05		Tetrachloroethene	Benzene, Trichloroethene, Vinyl Chloride	NA	
		Total	3.E-03	Tetrachloroethene, Vinyl Chloride	Trichloroethene, Chromium	Benzene	NA	
	Groundwater Surficial Aquifer (Group 2)	Ingestion	2.E-05		Tetrachloroethene		NA	
		Dermal Contact	1.E-05		Tetrachloroethene		NA	
		Inhalation	3.E-07				NA	
		Total	3.E-05		Tetrachloroethene		NA	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Child/Adult Resident (continued)	Groundwater Surficial Aquifer (Group 3)	Ingestion	2.E-03	Chromium	Benzo(a)pyrene, Dibenz(a,h)anthracene	Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene	NA	
		Dermal Contact	2.E-03	Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	Benzo(k)fluoranthene		NA	
		Inhalation	1.E-05			Chloroform	NA	
		Total	4.E-03	Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Chromium	Benzo(k)fluoranthene	Chloroform	NA	
	Groundwater Surficial Aquifer (Group 4)	Ingestion	3.E-04	Vinyl chloride	Trichloroethene	Benzene	NA	
		Dermal Contact	8.E-05	Vinyl chloride	Trichloroethene	Benzene	NA	
		Inhalation	5.E-04	Vinyl chloride, Trichloroethene	Benzene		NA	
		Total	9.E-04	Vinyl chloride, Trichloroethene	Trichloroethene	Benzene	NA	
	Groundwater Surficial Aquifer (Group 5)	Ingestion	2.E-05		Benzene	Tetrachloroethene, Vinyl Chloride	NA	
		Dermal Contact	4.E-06			Tetrachloroethene, Trichloroethene	NA	
		Inhalation	2.E-06				NA	
		Total	2.E-05		Trichloroethene	Tetrachloroethene, Vinyl Chloride	NA	
	All Media[1]	Total	4.E-03				NA	
Future Military Personnel	Soil* Industrial Area	Ingestion	6.E-07				0.03	
		Dermal Contact	6.E-08				0.002	
		Inhalation	1.E-08				2E-05	
		Total	7.E-07				0.03	
	Soil* Flight Line Area	Ingestion	2.E-06				0.1	
		Dermal Contact	3.E-08				0.01	
		Inhalation	3.E-08				6E-05	
		Total	2.E-06				0.1	
	Surface Water Western Pond	Ingestion	0.E+00				1E-05	
		Dermal Contact	0.E+00				5E-06	
		Inhalation	NA				NA	
		Total	0.E+00				2E-05	
	Sediment Western Pond	Ingestion	3.E-08				1E-03	
		Dermal Contact	1.E-08				7E-04	
		Inhalation	NA				NA	
		Total	4.E-08				2E-03	
	All Media	Total	3.E-06				0.1	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Industrial Worker	Soil* Industrial Area	Ingestion	4.E-06			Chromium	0.03	
		Dermal Contact	4.E-07				0.002	
		Inhalation	7.E-08				2E-05	
		Total	4.E-06			Chromium	0.03	
	Soil* Flight Line Area	Ingestion	1.E-05			Arsenic, Chromium	0.1	
		Dermal Contact	2.E-07				0.01	
		Inhalation	2.E-07				6E-05	
		Total	1.E-05			Arsenic, Chromium	0.1	
	Groundwater Surficial Aquifer (Group 1)	Ingestion	4.E-04	Tetrachloroethene	Vinyl chloride	Benzene, Trichloroethene, Chromium	0.4	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	4.E-04	Tetrachloroethene	Vinyl chloride	Benzene, Trichloroethene, Chromium	0.4	
	Groundwater Surficial Aquifer (Group 2)	Ingestion	5.E-06			Tetrachloroethene	0.002	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	5.E-06			Tetrachloroethene	0.002	
	Groundwater Surficial Aquifer (Group 3)	Ingestion	2.E-04	Chromium	Dibenz(a,h)anthracene	Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene	0.2	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	2.E-04	Chromium	Dibenz(a,h)anthracene	Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene	0.2	
	Groundwater Surficial Aquifer (Group 4)	Ingestion	6.E-05	Vinyl chloride		Trichloroethene	0.2	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	6.E-05	Vinyl chloride		Trichloroethene	0.2	
	Groundwater Surficial Aquifer (Group 5)	Ingestion	4.E-06			Trichloroethene, Vinyl chloride	0.03	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	4.E-06				0.03	
	All Media[1]	Total	4.E-04				0.6	
Future Trespasser/ Visitor Adult	Soil* Industrial Area	Ingestion	7.E-07				0.01	
		Dermal Contact	4.E-08				0.0003	
		Inhalation	4.E-09				1E-06	
		Total	8.E-07				0.007	
	Soil* Flight Line Area	Ingestion	2.E-06			Arsenic, Chromium	0.02	
		Dermal Contact	3.E-08				0.001	
		Inhalation	9.E-09				3E-06	
		Total	2.E-06			Arsenic, Chromium	0.02	

TABLE 7-4
Summary of RME Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Trespasser/ Visitor Adult (continued)	Surface Water Western Pond	Ingestion	0.E+00				4E-05	
		Dermal Contact	0.E+00				5E-06	
		Inhalation	NA				NA	
		Total	0.E+00				5E-05	
	Sediment Western Pond	Ingestion	8.E-07				0.005	
		Dermal Contact	4.E-07				0.003	
		Inhalation	NA				NA	
		Total	1.E-06				0.01	
	All Media	Total	4.E-06				0.04	
Future Trespasser/ Visitor Youth	Soil* Industrial Area	Ingestion	5.E-07				0.01	
		Dermal Contact	1.E-08				0.0002	
		Inhalation	2.E-09				1E-06	
		Total	5.E-07				0.01	
	Soil* Flight Line Area	Ingestion	2.E-06				0.03	
		Dermal Contact	4.E-09				0.001	
		Inhalation	4.E-09				3E-06	
		Total	2.E-06				0.03	
	Surface Water Western Pond	Ingestion	0.E+00				6E-05	
		Dermal Contact	0.E+00				5E-06	
		Inhalation	NA				NA	
		Total	0.E+00				7E-05	
	Sediment Western Pond	Ingestion	5.E-07				8E-03	
		Dermal Contact	4.E-07				1E-03	
		Inhalation	NA				NA	
		Total	9.E-07				9E-03	
	All Media	Total	3.E-06				0.05	

Notes:

Soil* - surface soil and subsurface soil combined.
[1] Total from All Media includes groundwater only from most contaminated well.

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC

TABLE 7-5
Summary of CTE Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Adult Resident	Soil* Industrial Area	Ingestion	NA				0.01	
		Dermal Contact	NA				0.0002	
		Inhalation	NA				NA	
		Total	NA				0.01	
	Soil* Flight Line Area	Ingestion	NA				0.05	
		Dermal Contact	NA				0.0004	
		Inhalation	NA				NA	
		Total	NA				0.05	
	Groundwater Surficial Aquifer (Group 1)	Ingestion	NA				0.6	
		Dermal Contact	NA				0.1	
		Inhalation	NA				NA	
		Total	NA				0.7	
	Groundwater Surficial Aquifer (Group 4)	Ingestion	NA				0.2	
		Dermal Contact	NA				0.0	
		Inhalation	NA				NA	
		Total	NA				0.3	
	All Media[1]	Total	NA				0.8	
Future Child Resident	Soil* Industrial Area	Ingestion	NA				0.1	
		Dermal Contact	NA				0.001	
		Inhalation	NA				NA	
		Total	NA				0.1	
	Soil* Flight Line Area	Ingestion	NA				0.2	
		Dermal Contact	NA				0.004	
		Inhalation	NA				NA	
		Total	NA				0.2	
	Groundwater Surficial Aquifer (Group 1)	Ingestion	NA				2	
		Dermal Contact	NA				0.3	
		Inhalation	NA				0.005	
		Total	NA				2	Tetrachloroethene
	Groundwater Surficial Aquifer (Group 3)	Ingestion	NA				1	Chromium
		Dermal Contact	NA				0.2	
		Inhalation	NA				2E-05	
		Total	NA				1	Chromium
	Groundwater Surficial Aquifer (Group 4)	Ingestion	NA				1	Vinyl Chloride
		Dermal Contact	NA				0.1	
		Inhalation	NA				3E-05	
		Total	NA				1	Vinyl Chloride
	All Media[1]	Total	NA				3	

TABLE 7-5
Summary of CTE Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Child/Adult Resident	Soil* Industrial Area	Ingestion	2E-05			Arsenic, Chromium	NA	
		Dermal Contact	5E-06			Benzo(a)pyrene	NA	
		Inhalation	NA				NA	
		Total	2E-05			Benzo(a)pyrene, Arsenic, Chromium	NA	
	Soil* Flight Line Area	Ingestion	1E-05			Arsenic, Chromium	NA	
		Dermal Contact	5E-05			Benzo(a)pyrene	NA	
		Inhalation	NA				NA	
		Total	6E-05			Benzo(a)pyrene, Arsenic, Chromium	NA	
	Groundwater Group 1	Ingestion	6E-04	Tetrachloroethene	Vinyl chloride, Chromium	Trichloroethene	NA	
		Dermal Contact	2E-04	Tetrachloroethene		Vinyl Chloride	NA	
		Inhalation	2E-06		Tetrachloroethene		NA	
		Total	8E-04	Tetrachloroethene	Vinyl chloride, Chromium	Trichloroethene	NA	
	Groundwater Group 2	Ingestion	7E-06			Tetrachloroethene	NA	
		Dermal Contact	1E-06			Tetrachloroethene	NA	
		Inhalation	NA				NA	
		Total	8E-06			Tetrachloroethene	NA	
	Groundwater Group 3	Ingestion	1E-03	Chromium	Dibenz(a,h)anthracene	Benzo(a)pyrene, Benzo(b)fluoranthene, Indeno(1,2,3-cd)pyrene	NA	
		Dermal Contact	7E-04	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene, Dibenzo(a,h)anthracene	NA	
		Inhalation	2E-08				NA	
		Total	2E-03	Benzo(a)pyrene, Chromium	Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene	NA	
	Groundwater Group 4	Ingestion	9E-05	Vinyl chloride		Trichloroethene	NA	
		Dermal Contact	2E-05				NA	
		Inhalation	1E-09				NA	
		Total	1E-04	Vinyl chloride		Trichloroethene	NA	
	All Media[1]	Total	9E-04				NA	

TABLE 7-5
Summary of CTE Cancer Risks and Hazard Indices
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Industrial Worker	Soil* Industrial Area	Ingestion	4E-07				0.01	
		Dermal Contact	8E-09				0.1	
		Inhalation	NA				NA	
		Total	5E-07				0.1	
	Soil* Flight Line Area	Ingestion	7E-07				0.02	
		Dermal Contact	3E-09				0.3	
		Inhalation	NA				NA	
		Total	7E-07				0.3	
	Groundwater Group 1	Ingestion	1E-04	Tetrachloroethene		Vinyl Chloride, Chromium	0.4	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	1E-04	Tetrachloroethene		Vinyl Chloride, Chromium	0.4	
	Groundwater Group 3	Ingestion	5E-05		Chromium	Benzo(a)pyrene, Dibenz(a,h)anthracene	0.2	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	5E-05		Chromium	Benzo(a)pyrene, Dibenz(a,h)anthracene	0.2	
	Groundwater Group 4	Ingestion	2E-05		Vinyl chloride	Trichloroethene	0.2	
		Dermal Contact	NA				NA	
		Inhalation	NA				NA	
		Total	2E-05		Vinyl chloride	Trichloroethene	0.2	
	All Media[1]	Total	1E-04				0.8	

Notes:

Soil* - surface soil and subsurface soil combined.
[1] Total from All Media includes groundwater only from most contaminated wel
NA - Not Assessed

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC

TABLE 7-6
Comparison of Historical Data Included in the Basewide Vapor Intrusion Evaluation and Expanded Supplemental RI Groundwater Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

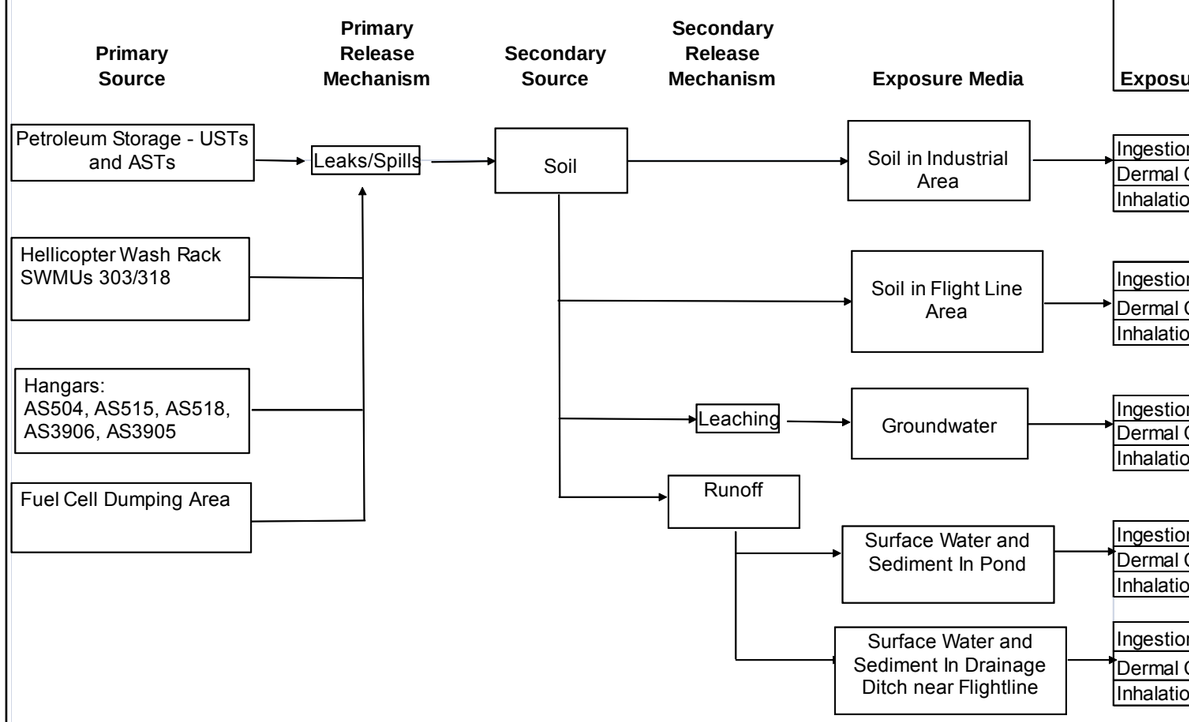
CAS Number	Chemical	Units	2002-2007 Groundwater Data Included in the Basewide Vapor Intrusion Evaluation						Expanded Supplemental Remedial Investigation Groundwater Data						Industrial Generic GWSL (AF=0.1)	Unrestricted Generic GWSL (AF=0.1)
			Minimum Detected Concentration Qualifier	Maximum Detected Concentration Qualifier	Location of Maximum Detected Concentration	Sample ID of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits	Minimum Detected Concentration Qualifier	Maximum Detected Concentration Qualifier	Location of Maximum Detected Concentration	Sample ID of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/L	0.25 J	510	IR86-MW10IW	IR86-GW10IW-06B	15/184	0.5 - 20	1.5	620	IR86-MW10IW	IR86-GW10IW-09D	3/24	1 - 4	6,490	1,548
75-34-3	1,1-Dichloroethane	µg/L	0.044 J	**10**	SWMU318-GW20	SWMU318-GW20-02A-06242004	24/203	0.5 - 10	0.19 J	3.4	IR86-MW10IW	IR86-GW10IW-09D	9/24	1 - 1	35	6.8
75-35-4	1,1-Dichloroethene	µg/L	0.061 J	42	IR86-IS63	IR86-GW-IS63-47-53-07B	41/202	0.5 - 13	0.27 J	4	IR86-MW61	IR86-GW61-09D	7/24	1 - 1	849	203
591-78-6	2-Hexanone	µg/L	0.75 J	2.2 J	IR86-IS63	IR86-GW-IS63-55-60-07B	4/202	2.5 - 25	14	14	IR86-MW63	IR86-GW63-10A	1/24	5 - 5	38,447	9,168
71-43-2	Benzene	µg/L	0.05 J	**140**	IR86-IS56, SWMU318-GW35	IR86-GW-IS56-22-27-07B, SWMU318-GW35-01-F	95/198	0.5 - 10	0.11 J	**11**	IR86-MW52	IR86-GW52-09D	14/24	1 - 1	7.7	1.5
75-15-0	Carbon disulfide	µg/L	0.10 J	55 J	IR86-IS08	IR86-IS08-GW-11-13-08B	57/202	0.5 - 10	0.6 J	0.6 J	IR86-MW39	IR86-GW39-10A	1/24	1 - 1	5,432	1,279
67-66-3	Chloroform	µg/L	**1.0 J**	**3.0 J**	SWMU318-MW04	SWMU318-MW04-05A	5/202	0.5 - 10	0.44 J	**2** J	IR86-MW58	IR86-GW58-09D	4/24	1 - 1	3.7	0.76
74-87-3	Chloromethane	µg/L	0.12 J	1.4 J	IR86-IS63	IR86-GW-IS63-55-60-07B	9/202	0.5 - 10	0.3 J	0.3 J	IR86-MW52	IR86-GW52-09D	1/24	1 - 1	1,103	266
156-59-2	cis-1,2-Dichloroethene	µg/L	0.059 J	670	SWMU318-GW10	SWMU318-GW10-01-03202004	118/202	0.5 - 100	0.22 J	150 J	IR86-MW58	IR86-GW58-09D	16/24	1 - 1	N/A	N/A
110-82-7	Cyclohexane	µg/L	0.6 J	6 J	SWMU318-MW06	SWMU318-MW06-05A	5/184	0.5 - 10	0.61 J	32	IR86-MW27IW	IR86-GW27IW-09D	5/24	1 - 1	3,892	943
75-71-8	Dichlorodifluoromethane (Freon-12)	µg/L	0.21 J	**47**	IR86-MW10IW	IR86-GW10IW-06B	6/184	0.5 - 20	1.4	**51**	IR86-MW10IW	IR86-GW10IW-09D	4/24	1 - 1	68	16
100-41-4	Ethylbenzene	µg/L	0.13 J	**110**	SWMU318-GW35	SWMU318-GW35-01-F	54/202	0.5 - 10	0.38 J	**4.6**	IR86-MW52	IR86-GW52-09D	4/24	1 - 1	17	3.4
98-82-8	Isopropylbenzene	µg/L	0.11 J	5.0 J	SWMU318-GW35	SWMU318-GW35-01-F	11/184	0.5 - 10	0.12 J	0.46 J	IR86-MW52	IR86-GW52-09D	2/24	1 - 1	4,384	1,023
108-87-2	Methylcyclohexane	µg/L	0.1 J	3.0 J	SWMU318-MW06	SWMU318-MW06-05A	6/184	0.5 - 10	2.6 J	4.1 J	IR86-MW47	IR86-GW47-09D	2/24	5 - 5	94	394
1634-04-4	Methyl-tert-butyl ether (MTBE)	µg/L	0.11 J	120	SWMU318-GW33	SWMU318-GW33-01-F	6/184	0.5 - 10	66	66	IR86-MW39	IR86-GW39-10A	1/24	1 - 1	2,110	422
127-18-4	Tetrachloroethene	µg/L	0.11 J	**64**	IR86-MW10IW	IR86-GW10IW-06B	14/202	0.5 - 20	**190**	**190**	IR86-MW10IW	IR86-GW10IW-09D	1/24	1 - 1	3.0	0.59
108-88-3	Toluene	µg/L	0.10 J	200	IR86-IS56	IR86-GW-IS56-22-27-07B	73/202	0.5 - 10	0.19 J	5.1	IR86-MW52	IR86-GW52-09D	5/24	1 - 1	89,230	21,091
156-60-5	trans-1,2-Dichloroethene	µg/L	0.12 J	36	IR86-MW21IW	IR86-GW21IW-06B	39/201	0.5 - 10	0.22 J	3.7 J	IR86-MW58	IR86-GW58-09D	5/24	1 - 1	1,612	391
79-01-6	Trichloroethene	µg/L	0.12 J	**1,200**	IR86-MW27, SWMU318-GW10	IR86-MW27-04032004, SWMU318-GW10-01-03202004	104/202	0.5 - 100	0.53	**260**	IR86-MW61	IR86-GW61-09D	14/24	0.5 - 0.5	17	3.3
75-01-4	Vinyl chloride	µg/L	**0.17 J**	**140**	SWMU318-GW10, SWMU318-GW23	SWMU318-GW10-01-03202004, SWMU318-GW23-01-06232004	42/202	0.5 - 13	**1.1**	**68 J**	IR86-MW58	IR86-GW58-09D	3/24	0.5 - 0.5	2.5	0.14
1330-20-7	Xylene, total	µg/L	0.17 J	250	IR86-IS56	IR86-GW-IS56-22-27-07B	19/186	0.5 - 15	6.3	6.8	IR86-MW52	IR86-GW52-09D	2/24	0.5 - 0.5	2,316	526
--	m- and p-Xylene	µg/L	0.90 J	78	SWMU318-GW35	SWMU318-GW35-01-F	7/102	1 - 10	N/A	N/A	N/A	N/A	N/A	N/A	2,316	526
95-47-6	o-Xylene	µg/L	0.10 J	110	SWMU318-GW35	SWMU318-GW35-01-F	20/156	0.5 - 10	N/A	N/A	N/A	N/A	N/A	N/A	16,347	3,850

Notes:

Data presented for constituents detected at least once in the 2008-2010 Expanded Supplemental RI groundwater data.
Screening criteria for cyclohexane used as surrogate for methylcyclohexane

AF = Attenuation factor
J = Analyte present, value may or may not be accurate or precise
N/A = Not analyzed
GWSL = Groundwater Screening Levels
µg/L = Micrograms per liter
Shading indicates exceedance of Industrial Generic criteria
Bold text indicates exceedance of Unrestricted Generic criteria

Generated By: D.Stannard/DAY
Checked By: R.Warren/WDC



		Current/Future					Future			
Exposure Media	Exposure Route	Military Personnel	Maintenance Worker	Industrial Worker	Trespasser /Visitor Adult	Trespasser / Visitor Youth	Resident Adult	Resident Child	Industrial Worker	Construction Worker
Soil in Industrial Area	Ingestion	X	X	X	X	X	X	X	X	X
	Dermal Contact	X	X	X	X	X	X	X	X	X
	Inhalation	X	X	X	X	X	X	X	X	X
Soil in Flight Line Area	Ingestion	X[1]	X	X[1]	X	X	X	X	X	X
	Dermal Contact	X[1]	X	X[1]	X	X	X	X	X	X
	Inhalation	X[1]	X	X[1]	X	X	X	X	X	X
Groundwater	Ingestion	NA	NA	NA	NA	NA	X	X	X	NA
	Dermal Contact	NA	NA	NA	NA	NA	X	X	NA	X
	Inhalation	NA	NA	NA	NA	NA	X	X	NA	X
Surface Water and Sediment In Pond	Ingestion	X	X	NA	X	X	NA	NA	X	X
	Dermal Contact	X	X	NA	X	X	NA	NA	X	X
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA	NA
Surface Water and Sediment In Drainage Ditch near Flightline	Ingestion	NA	X[2]	NA	X	X	NA	NA	NA	X[2]
	Dermal Contact	NA	X[2]	NA	X	X	NA	NA	NA	X[2]
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

NA - Not Applicable or pathway is incomplete

X - Potentially complete exposure pathways

UST - Underground Storage Tank

AST - Aboveground Storage Tank

[1] - Future exposure only

[2] - Exposure to sediment only

Figure 7-1
HHRA Conceptual Site Model
Operable Unit 20 (Site 86)
Expanded Supplemental Remedial Investigation
MCB CamLej
North Carolina

CH2MHILL

Generated by: D. Stannard/DAY Checked by: T. Grim/CLT

SECTION 8

Ecological Risk Assessment

8.1 Introduction

This section completes Steps 1 through 3 of the ERA process for Site 86. This ERA evaluates surface soil, subsurface soil, sediment, surface water, and groundwater data that were collected at Site 86 from 2007 through 2010. The SLERA was performed in accordance with the following guidance:

- *Ecological Risk Assessment Guidance for Superfund (RAGS): Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997b)
- *Region 4 Ecological Risk Assessment Bulletins – Supplement to RAGS* (USEPA, 2001b)
- *Navy Guidance for Conducting Ecological Risk Assessments* (Navy, 2003)
- *NCDENR Guidelines for Performing Screening Level Ecological Risk Assessments within the North Carolina Division of Waste Management* (NCDENR, 2003).

8.2 Review of 2003 Amended RI

The SLERA, conducted as part of the 1996 RI, was updated as part of the Amended RI to evaluate whether unacceptable risks to ecological receptors may be present as a result of environmental impacts associated with Site 86. The SLERA was conducted at the area within the original Site 86 boundary, as shown in **Figure 2-2.** The SLERA identified potential risks to soil invertebrates and plants as a result of site-related contaminants (PAHs, mercury, copper, vanadium, iron, chromium, and aluminum) present in surface soil at concentrations exceeding surface soil screening values. The SLERA concluded that, based on the industrial use of Site 86 and the surrounding area, an ecologically diverse population of terrestrial receptors was not expected to be present and therefore should not be impacted by site-related contaminants (CH2M HILL/Baker/CDM, 2003).

Since the completion of the SLERA in 2003, the original Site 86 area has been developed into an asphalt parking lot. Soil, identified during the SLERA as contributing to the elevated ecological risk, is now capped by asphalt, further reducing or eliminating the exposure pathway for soil invertebrates and plants. Soils within the original Site 86 boundary were not evaluated further in the updated SLERA discussed in Sections 8.3 through 8.5.

8.3 Step 1—Preliminary Problem Formulation and Ecological Effects Evaluation

8.3.1 Problem Formulation

The problem formulation covers the physical layout of the site, its history and ecology, available analytical data, fate and transport mechanisms, complete exposure pathways, and receptors of concern.

Site Description

Site 86 is located within MCAS New River, adjacent to Camp Geiger in the northwest corner of MCB CamLej (**Figure 2-2)**. In August 2006, the Site 86 boundary was expanded to include the northern portion of MCAS New River flight line between White Street and Curtis Road. In 2010, the Site 86 boundary (approximately 146 acres) was further expanded to include Building AS508 and the northeast grass area. A detailed description of the history of site use is included in Section 2.

Ecological Setting

MCB CamLej is located within the New River watershed and is bisected by the New River, which is classified as a coastal blackwater river. The New River watershed is the westernmost of the four major river systems in the basin. It is also the largest and most populated watershed and includes the City of Jacksonville.

The watershed upgradient of MCB CamLej is characterized by gum-cypress swamps, with upland areas used primarily for forestry and agriculture. At MCB CamLej, the river widens into a broad, slow-moving tidal embayment. The New River eventually discharges into the Atlantic Ocean through a narrow opening called the New River Inlet. Jacksonville and the Base encompass most of the land in the lower watershed (the area downstream of the U.S. 17 bridge). There are 223 stream miles, 22,810 estuarine acres, and 15 miles of Atlantic coastline in this subbasin.

The portion of the North Carolina coast that includes MCB CamLej consists of sandy beaches. The adjacent upland area transitions to a region of pines (*Pinus* sp.), scrub oaks (*Quercus* sp.), sweet gum (*Liquidambar styraciflua*), and dogwood (*Cornus* sp.). Wire grass (*Cynodon dactylon*) is the primary undergrowth species. The area is interspersed with bottomland hardwood forests which are dominated by bald cypress (*Taxodium distichum*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), and white cedar (*Chamaecyparis thyoides*). Croplands are common in this area and consist primarily of corn, cotton, peanuts, and tobacco.

The climate at MCB CamLej is characterized by short, mild winters and long, hot, humid summers. Average annual net precipitation is approximately 50 inches. Ambient air temperatures generally range from 33 to 53°F in the winter months, and 71°F to 88°F during the summer months.

The Site 86 area is low-lying, with elevation ranging from 10 to 17 feet above msl. The Soil Conversation Service (SCS) of the United States Department of Agriculture (USDA) describes the surface soils as having rapid drainage and slow runoff (USDA, 1992).

The western and central portions of Site 86 are of limited value to wildlife, given the industrial land use (**Figure 2-3**). Habitat consists primarily of small areas of maintained grass with a few trees. The 1.5-acre stormwater retention pond, located at the intersection of White and Campbell Streets (**Figure 2-2**), receives runoff from the site. During heavy rain events, stormwater flows along a drainage ditch parallel to White Street and discharges to the northeastern corner of the stormwater retention pond. Water is pumped out of the west end of the pond into a series stormwater drainage ditches that eventually flow to a wastewater treatment facility located on the Base. The ditches are approximately 4 feet wide, covered by grass and herbaceous vegetation and contain water only after a heavy rain

event. As such, they are not considered aquatic habitat. The pond banks are covered by herbaceous vegetation. The substrate of the pond is composed of sand, silt, clay, muck, some gravel, and fill material. Frogs, turtles, and fish have been observed. Prior to the construction of the pond in 1999, the location consisted of maintained grass and the stormwater drainage ditches that are adjacent to the streets.

An open field covers most of the eastern portion of the site and includes grasses approximately 2 to 3 feet tall. The area is periodically mown for airfield safety. A drainage ditch conveys water from the airfield complex to the east, under Curtis Road. The ditch was walked during a May 2009 visit by a CH2M HILL ecologist. The ditch daylights from a culvert near the eastern end of the tarmac, and appeared to be tidally influenced only near Curtis Road. The freshwater section of the ditch ranged in width from 1.5 to 4 feet. Depth ranged from 6 to 18 inches, with a few deeper locations near the discharge point of culverts. Frogs and fish were observed in the freshwater section of the ditch, and most of the vegetation was herbaceous. An opossum was observed during the visit. Approximately 750 feet west of Curtis Road, the open ditch changed to a culvert. The culvert daylights again about 250 feet west of Curtis Road. This last section of the ditch appeared to be tidally influenced. Width and depth were 6 and 2 feet, respectively, and fish were present.

The ditch discharges into a tidal wetland complex that borders the New River. These wetlands and the New River are the only aquatic features into which site groundwater is likely to discharge.

The ecological checklist in **Appendix J** identifies the terrestrial and aquatic habitats onsite or nearby. Threatened or endangered species in Onslow County are not expected to occur at the site (**Table J-1**).

Summary of Available Analytical Data

Soil data used for this assessment were collected during 2007 and 2009. Surface water was collected from the western pond in 2007 and 2008 and from the drainage ditch in the eastern field in 2009. Groundwater data were collected in 2009 and 2010. Sediment samples were collected from the western pond in 2008 and from the drainage ditch in 2009 and 2010. The following data were used for the assessment:

- Twenty-three soil grab samples (plus field duplicates) from 0 to 1 feet bgs and two soil grab samples (no field duplicates for subsurface soil) from 1 to 4 feet bgs
- Five surface water samples (plus one field duplicate) from the western pond and six surface water samples (plus one field duplicate) from the drainage ditch
- Sixty-six groundwater monitoring well samples (plus seven field duplicates)
- Two sediment samples (plus one field duplicate) from the western pond and 15 sediment samples (plus two field duplicates) from the drainage ditch

All sample locations are listed in **Table J-2**. The samples were analyzed for metals, VOCs, SVOCs, PCBs, and pesticides. Surface water samples collected from the drainage ditch were analyzed for dissolved metals.

Fate and Transport Mechanisms

Fate and transport mechanisms for Site 86, as they relate to ecological exposures, are briefly discussed below.

Leaching to Groundwater Twenty-two VOCs, 11 SVOCs, 15 metals, and 1pesticide were detected in groundwater samples collected from 2009 and 2010. Site-related constituents in groundwater may migrate offsite and impact aquatic habitat. In areas where the water table intersects the ground surface, groundwater and any contaminants contained therein may discharge to surface water. Consequently, groundwater data were screened using marine screening levels, assuming that groundwater may discharge to the nearby New River.

Surface Water Runoff and Erosion The western area of the site is developed and mostly paved. The runoff from this area discharges to drainage ditches or the retention pond at the western edge of the site. The eastern portion of the site is predominantly a grassy field and runoff either infiltrates into the soil or flows east via the drainage ditch. In general, high rates of infiltration are expected across most of the unpaved areas and erosion at the site is expected to be minimal.

Volatilization This exposure pathway is expected to be insignificant. While burrowing may occur on the site, burrow depths are likely to be shallow given the type of receptors present. Depth to groundwater is typically 6 to 7 feet, but the highest concentrations of solvents are significantly deeper. The pathway is also not expected to be significant because VOC contamination was not elevated or widespread in surface soils and was not detected in subsurface soils.

Dust Soil dust at the site is not expected to be significant. Most of the site is paved, developed, or covered by grass and trees.

Conceptual Site Model

Information regarding the general habitat features of Site 86 and the fate and transport of the chemicals associated with site media was used to build an ecological CSM. Key components of the CSM include sources, release and transport mechanisms, exposure media, receptors, and exposure routes (**Figure 8-1**).

Potentially complete and significant exposure pathways to semi-aquatic and terrestrial ecological receptors include the following:

- Direct exposure to plants (root uptake), benthic and soil invertebrates (dermal and direct ingestion), and aquatic biota (dermal and direct ingestion)
- Incidental ingestion and dermal exposure (wildlife)
- Food chain (prey consumption) exposures (wildlife)

In the western and central portions of Site 86, the number of wildlife species that contact contaminants in site media, as well as their exposure frequencies and durations, are limited because of the limited size and sporadic nature of the habitat. Examples of wildlife that might use the developed areas are American robin, mourning dove, and white-footed mouse.

One potential scenario in the CSM includes contaminated groundwater migrating offsite and discharging to surface water. The New River and a tidal wetland complex that borders it are the main water bodies into which groundwater may discharge.

Terrestrial bird and mammal species selected as representative species for Site 86 include American robin, Canada goose, mourning dove, red-tailed hawk, short-tailed shrew, meadow vole, white-footed mouse, and red fox. Selected semi-aquatic bird and mammal species include the great blue heron, barn swallow, and raccoon.

8.3.2 Ecological Effects Evaluation

The potential for effects from exposure to each medium was initially evaluated by comparing ecological screening values (ESVs) to maximum concentrations (Step 2) of constituents detected at the site. The ESVs for soil were identified as the lowest available from the USEPA Region 4 Recommended ESVs (USEPA, 2001b) and USEPA Ecological Soil Screening Levels (EcoSSLs) (USEPA, 2009e). The assessment of sediment involved comparison of analyte concentrations to the Region 4 ecological screening values (USEPA, 2001b). The assessment of surface water involved comparison of analyte concentrations to the lowest available freshwater screening values from the Region 4 ecological screening values and NRWQC (USEPA, 2009c). Groundwater analyte concentrations were compared to the lowest available marine screening value from the Region 4 ecological screening values and USEPA NRWQC (USEPA, 2009c).

Maximum soil and groundwater concentrations of metals were also compared to MCB CamLej background concentrations (two times the mean background value) (Baker, 2001).

8.4 Step 2—Preliminary Exposure Estimate and Risk Calculation

In Step 2, risk to ecological receptors was evaluated by calculating HQs. HQs are calculated by dividing the EPC by the corresponding medium-specific ESV. Maximum concentrations for detected analytes and maximum detection limits for undetected analytes were used to conservatively estimate potential chemical exposures of ecological receptors. Risk estimates were calculated for surface soil, subsurface soil, surface water, groundwater, and sediment (**Tables J-3 through J-9**).

North Carolina SLERA guidance (NCDENR, 2003) requires that constituents in one of the following categories be identified as a Step 2 COPC:

- Category 1—Contaminants with a maximum detection exceeding the ESV
- Category 2—Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV
- Category 3—Detected contaminants with no ESV
- Category 4—Undetected contaminants with no ESV

Results of the Step 2 screening were as follows:

- Surface Soil
  - Category 1— Two SVOCs (bis[2-ethylhexyl]phthalate and butylbenzylphthalate), four pesticides, toluene, aluminum, cadmium, iron, lead, selenium, vanadium, and zinc
  - Category 2—Eight VOCs, seven SVOCs, seven PCBs, and three pesticides
  - Category 3—Three VOCs, three SVOCs, and cyanide
  - Category 4—19 VOCs and 20 SVOCs
- Subsurface Soil
  - Category 1—Aluminum and vanadium
  - Category 2—Two VOCs, nine SVOCs, eight PCBs, two pesticides, selenium, and thallium
  - Category 3—None
  - Category 4 - 22 VOCs and 23 SVOCs
- Surface Water (Western Pond)
  - Category 1—Aluminum
  - Category 2—Ten SVOCs, 7 PCBs, 12 pesticides, and 6 metals
  - Category 3—Barium, manganese, and vanadium
  - Category 4—29 VOCs, 42 SVOCs, 2 PCBs, 4 pesticides, cobalt, and cyanide
- Surface Water (Drainage Ditch)
  - Category 1—Endosulfan II and four metals (aluminum, cadmium, copper, and iron)
  - Category 2—Six SVOCs, seven PCBs, seven pesticides, four metals (beryllium, selenium, silver, and thallium), and six dissolved metals (aluminum, beryllium, cadmium, selenium, silver, and thallium)
  - Category 3—Two VOCs, eight SVOCs, delta-BHC, three metals, and three dissolved metals
  - Category 4—22 VOCs, 33 SVOCs, 3 pesticides, cobalt, and 2 dissolved metals (cobalt and vanadium)
- Groundwater
  - Category 1—Two VOCs (ethylbenzene and PCE), chromium, and silver
  - Category 2—Two SVOCs (hexachlorobutadiene and hexachlorocyclopentadiene), 7 PCBs, 12 pesticides, nickel, and thallium
  - Category 3—15 VOCs, 9 SVOCs, antimony, and iron

  - Category 4— 11 VOCs, 39 SVOCs, 5 pesticides, beryllium, cobalt, and vanadium
- Sediment (Western Pond)
  - Category 1—Dibenz(a,h)anthracene, four pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT and alpha-chlordane), cadmium, lead, and zinc
  - Category 2—Two SVOCs (acenaphthene and acenaphthylene), seven PCBs, three pesticides, mercury, and silver
  - Category 3—Methylene chloride, four SVOCs, two pesticides, and six metals
  - Category 4—50 VOCs, 47 SVOCs, 2 PCBs, 12 pesticides, beryllium, selenium, and thallium
- Sediment (Drainage Ditch)
  - Category 1—13 SVOCs, 2 pesticides (4,4'-DDE and 4,4'-DDT), antimony, arsenic, cadmium, copper, lead, nickel, silver, and zinc
  - Category 2—Two SVOCs (2-methylnaphthalene and acenaphthene), seven PCBs, and four pesticides
  - Category 3—Four VOCs, three SVOCs, five pesticides, and nine metals
  - Category 4—44 VOCs, 45 SVOCs, and 9 pesticides

Based on the results of the SLERA, 85 COPCs in surface soil, 70 COPCs in subsurface soil, 118 COPCs in western pond surface water, 113 COPCs in drainage ditch surface water, 111 COPCs in groundwater, 148 COPCs in western pond sediment, and 155 COPCs in drainage ditch sediment were carried forward to Step 3.

8.5 Step 3—Refinement of Conservative Exposure Assumptions

Using the same CSM, the first step of the Step 3 refinement is to re-evaluate the conservative assumptions used in Steps 1 and 2, resulting in a refinement of the COPC list. Step 3 includes a re-assessment of the risks to lower trophic level receptors and an assessment of risks to upper trophic level receptors. Bio-accumulative analytes with HQs greater than 1.0, based on the Step 3 direct exposure screening, are used in the evaluation of potential risks to the upper trophic level receptors.

The risks to lower trophic level receptors were recalculated with a conservative estimate of the mean as the EPC. Conservative estimates of the mean were calculated using ProUCL Version 4.0.0.4 (USEPA, 2009d). If a conservative estimate of the mean could not be calculated, the maximum concentration was retained as the EPC. Risks were further evaluated using a weight-of-evidence (WOE) approach not used in Step 2. The WOE approach considers the magnitude of the recalculated risks, toxicity information not used in the Step 2 screening, the frequency of detection, the magnitude of exceedance, and the distribution of detected concentrations.

When ESVs were not available, a supplemental ESV was identified in Step 3. These supplemental values were selected from the following sources: *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas* (TCEQ, 2006), Screening Quick Reference Tables (Buchman, 2008), *Calculation and Evaluation of Sediment Effect Concentrations for the Amphipod Chironomus riparius* (Ingersoll et al., 1996), *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario* (Persaud et al., 1993), *Supplemental Guidance to RAGS: Region 4 Bulletins Ecological Risk Assessment* (USEPA, 2001b), and Region 5 RCRA Ecological Screening Levels (USEPA, 2003b).

A brief summary of the screening results is presented below. Sections 8.5.1 through 8.5.7 and **Tables J-10** through **J-16** present the results of the Step 3 screening for lower trophic level receptors. Section 8.5.8 and **Tables J-17** through **J-20** present the methods and the results of the Step 3 food chain transfer screening for wildlife.

8.5.1 Surface Soil

Sixty-four non-detected and 21 detected COPCs in surface soil were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations of site receptors. Additionally, the lack of identified risk drivers in surface soil supports the conclusion that non-detected analytes are not likely to be present at elevated levels or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Constituents that were detected and exceeded ESVs in Step 2 included toluene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, beta-BHC, dieldrin, endrin, gamma-BHC (lindane), aluminum, cadmium, iron, lead, selenium, vanadium, and zinc. These analytes were retained and further evaluated using a conservative estimate of the mean as the EPC in Step 3.

Based on the refined screening, toluene, dieldrin, selenium, and zinc were found to have HQs of 1 or less (**Table J-10**) and are considered to pose no risk.

In general, the remainder of the analytes with HQs above 1.0 had low magnitudes of exceedance, low frequency of exceedance, or both (**Table J-10**). Beta-BHC, gamma-BHC (lindane), and endrin had low frequencies of detection (less than 5 percent) and exceedance (less than 5 percent) and were not retained as soil COPCs. While aluminum, iron, and vanadium had HQs above 1.0, the maximum concentrations were within the range of the MCB CamLej background levels and are not expected to pose significant risk to lower trophic level receptors. Additionally, the magnitude of exceedance for cadmium and lead was low. While bis(2-ethylhexyl)phthalate and butylbenzylphthalate had HQs above 1, the magnitude of exceedance was low for each and phthalates are common laboratory artifacts (California Department of Toxic Substance Control [CDTSC], 2006) and not likely the result of site-related activities.

No ESVs were available for seven detected constituents (2-butanone, acetone, methylcyclohexane, acetophenone, benzaldehyde, carbazole, and cyanide) during Step 2. Supplemental screening levels were identified as available for Step 3. The EPCs of acetophenone and cyanide were less than screening values for mammals presented in Buchman (2008). It should also be noted that 2-butanone and acetone are common

laboratory artifacts (CDTSC, 2006) and not likely the result of site-related activities. Supplemental ESVs were not available for methylcyclohexane, benzaldehyde, carbazole, and cyanide. These analytes are addressed in the Uncertainty section (Section 8.6.2).

Based on this refined evaluation, no analytes in surface soil were considered to pose significant risk to lower trophic level receptors.

8.5.2 Subsurface Soil

Sixty-eight non-detected and two detected COPCs in subsurface soil were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations of site receptors. Additionally, the lack of identified risk drivers in subsurface soil supports the conclusion that non-detected analytes are not likely to be present at elevated levels or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Constituents that were detected and exceeded ESVs in Step 2 included aluminum and vanadium. These analytes were retained and further evaluated using a conservative estimate of the mean as the EPC in Step 3.

The HQs for aluminum and vanadium were 280 and 3, respectively. However, the concentrations for both aluminum and vanadium were within range of the MCB CamLej background levels. Consequently, these analytes are not expected to pose significant risk to lower trophic level receptors.

8.5.3 Surface Water (Western Pond)

One-hundred- fourteen non-detected and four detected COPCs in the western pond surface water were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations or communities of aquatic biota. Additionally, the lack of identified risk drivers in the surface and subsurface soil supports the conclusion that non-detected analytes are not likely to be present in surface water at elevated levels or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Of the four constituents detected and carried forward to Step 3, an ESV was available only for aluminum. Aluminum had a low magnitude of exceedance. Additionally, the surface soil concentrations onsite were within the range of MCB CamLej background levels, indicating that aluminum concentrations are consistent with background levels and are not expected to pose a significant risk to lower trophic level receptors.

No ESVs were available for three detected constituents (barium, manganese, and vanadium) during Step 2. Supplemental screening values were identified for these constituents in Step 3, and the EPCs of barium, manganese, and vanadium were less than the freshwater screening values presented in TCEQ (2006).

Based on this refined evaluation, no analytes in surface water (western pond) were considered to pose a significant risk to lower trophic level receptors.

8.5.4 Surface Water (Drainage Ditch)

Ninety-one non-detected and 22 detected COPCs in the drainage ditch surface water were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations or communities of aquatic biota. Additionally, the lack of identified risk drivers in the surface and subsurface soil supports the conclusion that non-detected analytes are not likely to be present in surface water at elevated levels or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Constituents that were detected and exceeded ESVs in Step 2 included endosulfan II and four metals (aluminum, cadmium, copper, and iron). These analytes were retained and further evaluated using a conservative estimate of the mean as the EPC in Step 3.

Aluminum, cadmium, and copper were not detected in the filtered samples, and the HQ for iron in the dissolved sample was less than 1. Consequently, these constituents are not considered to pose a significant risk to lower trophic level receptors.

No ESVs were available for 16 detected constituents (cis-1,2-DCE, TCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, delta-BHC, barium [total and dissolved], manganese [total and dissolved], and vanadium) during Step 2. Supplemental screening levels were identified for these constituents in Step 3.

The EPCs for benzo(a)anthracene, benzo(a)pyrene, cis-1,2-DCE, TCE, naphthalene, phenanthrene, pyrene, barium (total and dissolved), manganese, and vanadium were less than the screening values from TCEQ (2006). The HQs for these constituents were below 1.0 with the exception of benzo(a)pyrene (2.43); these constituents are considered not to pose a significant risk.

The EPC concentrations of benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and delta-BHC were less than the freshwater screening values presented in Buchman (2008). A supplemental screening value for fluoranthene was also available in Buchman (2008), and the resulting HQ was less than 2.

Based on this refined evaluation, no analytes in surface water (drainage ditch) were considered to pose a significant risk to lower trophic level receptors.

8.5.5 Groundwater

Eighty-one non-detected and 30 detected COPCs in groundwater were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations or communities of aquatic biota. Additionally, the lack of identified risk drivers in subsurface soil supports the conclusion that non-detected analytes are not likely to be present at elevated levels or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Constituents that were detected and exceeded ESVs in Step 2 included ethylbenzene, PCE, chromium, and silver. These analytes were retained and further evaluated using a conservative estimate of the mean as the EPC in Step 3. Based on the refined screening, ethylbenzene, PCE, and chromium were found to have HQs of 1 or less and are considered to pose no risk.

Silver concentrations in the groundwater exceeded the ESV (HQ = 9.83). However, the concentrations will likely become diluted as the groundwater discharges to the New River and associated wetlands east of the site. Additionally, silver concentrations in the surface soil were within the MCB CamLej background range, and silver was not detected in subsurface soil samples, suggesting that Site 86 is not the source of silver in the groundwater. Additionally, dissolved data were not available and the use of total metals data likely over-estimates risk. Consequently, silver is not expected to pose a significant risk to lower trophic level receptors upon discharge to surface water bodies.

No ESVs were available for 26 detected constituents during Step 2. Supplemental screening levels were identified as available for Step 3.

The EPCs of cis-1,2-DCE, fluorene, trans-1,2-DCE, TCE, and xylene were all less than the screening values available in TCEQ (2006). Freshwater supplemental screening values for 1,1,2-trichloro-1,2,2-trifluoroethane(Freon-113), 1,1-DCA, 2-hexanone, carbon disulfide, dichlorodifluoromethane (Freon-12), isopropylbenzene, VC, and benzo(a)pyrene were also available in TCEQ (2006). The EPCs for these constituents were below the freshwater supplemental screening values and therefore these constituents pose no significant risk to lower trophic level receptors.

The EPCs of MTBE, acenaphthylene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and dibenz(a,h)anthracene, and the maximum concentrations of bis(2-ethylhexyl)phthalate and antimony were less than the marine screening values presented in Buchman (2008); these constituents pose no risk to lower trophic level receptors. Iron concentrations exceeded the screening value available in Buchman (2008); however, the concentrations were within the range of the MCB CamLej background levels. Consequently, iron is not expected to pose a significant risk to lower trophic level receptors. A freshwater supplemental screening value was also available for indeno(1,2,3-cd)pyrene in Buchman (2008), and the resulting HQ was less than 1. It should also be noted that acetone is a common laboratory artifact (CDTSC, 2006) and is not likely the result of site-related activities. Supplemental ESVs were not available for cyclohexane or methylcyclohexane. These analytes are addressed in the Uncertainty section (Section 8.6.2).

8.5.6 Sediment (Western Pond)

One-hundred-twenty-seven non-detected and 21 detected COPCs in the western pond sediment were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations or communities of aquatic biota. Additionally, the lack of identified risk drivers in surface soil supports the conclusion that non-detected analytes are not likely to be present at elevated levels in sediments or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

Constituents that were detected and exceeded ESVs in Step 2 included dibenz(a,h)-anthracene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, cadmium, lead, and zinc. These analytes were retained and further evaluated in Step 3. The maximum concentration was used for each of the constituents in the evaluation rather than a more conservative estimate of the mean as the EPC due to the low number of samples.

Based on the refined screening, dibenz(a,h)anthracene had an HQ of 1.2, had a low magnitude of exceedance, and is unlikely to pose a significant risk to receptors. The constituents 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and alpha-chlordane had HQs above 10. However, total DDT concentrations for each sample were less than the probable effect concentration (PEC) (MacDonald et al., 2000) and the alpha-chlordane concentrations were less than the PEC for chlordane, suggesting that risk to sediment biota is not significant. Additionally, these pesticides are likely the result of historical routine application across MCB CamLej. This conclusion is supported by the results of the background sample (IR89-SD46) collected from Site 89, immediately north of MCAS New River to determine the anthropogenic concentrations of total DDTs in sediments during a previous investigation. This background sample contained 0.325 mg/kg of total DDTs. All samples at Site 86 were less than this background value. Consequently, risk from site-related pesticide concentrations is considered to be insignificant.

No ESVs were available for 13 detected constituents (methylene chloride, acetophenone, benzaldehyde, bis(2-ethylhexyl)phthalate, phenol, heptachlor epoxide, gamma-chlordane, aluminum, barium, cobalt, iron, manganese, and vanadium) during Step 2. Supplemental screening levels were identified as available for Step 3.

The maximum concentrations of methylene chloride and heptachlor epoxide were less than the supplemental screening values available in TCEQ (2006). Supplemental ESVs were available for bis(2-ethylhexyl)phthalate, phenol, gamma-chlordane, barium, and vanadium in Buchman (2008). However, the barium and vanadium ESVs were for marine sediment. The maximum concentrations of gamma-chlordane, barium, and vanadium were below the supplemental ESVs. Both bis(2-ethylhexyl)phthalate and phenol had a low magnitude of exceedance. Additionally, bis(2-ethylhexyl)phthalate is a common laboratory contaminant (CDTSC, 2006). These constituents are expected to pose no significant risk to lower trophic level receptors.

Supplemental ESVs for cobalt, iron, and manganese were available in Persaud et al. (1993), and an aluminum supplemental ESV was presented in Ingersoll et al. (1996). The maximum concentrations of these four constituents were below the supplemental screening values; these constituents are not expected to pose a significant ecological risk. No supplemental ESVs were available for acetophenone or benzaldehyde. These analytes are discussed in the Uncertainty section (Section 8.6.2).

8.5.7 Sediment (Drainage Ditch)

One-hundred-eleven non-detected and 44 detected COPCs in the drainage ditch sediment were carried forward to Step 3. If the non-detected COPCs were present, the actual concentrations would be less than the maximum laboratory-reported non-detect values; therefore, non-detected constituents are unlikely to pose a risk to populations or communities of aquatic biota. Additionally, the lack of identified risk drivers in surface soil supports the conclusion that non-detected analytes are not likely to be present at elevated

levels in sediment or to pose risk. Consequently, these analytes are not evaluated further, but are noted in the Uncertainty section (Section 8.6.2).

A total of 23 constituents were detected and exceeded ESVs in Step 2 (acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)-perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno-(1,2,3-cd)pyrene, phenanthrene, pyrene, 4,4'-DDE, 4,4'-DDT, antimony, arsenic, cadmium, copper, lead, nickel, silver, and zinc). These analytes were retained and further evaluated using a conservative estimate of the mean as the EPC in Step 3.

Based on the refined screening, arsenic had an HQ less than 1 and poses no risk to lower trophic level receptors. The constituents antimony, copper, lead, nickel, silver, and zinc had HQs less than 2 and low magnitudes of exceedance. Consequently, these constituents are not likely to pose a significant risk to lower trophic level receptors.

The constituents acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo-(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)-anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, 4,4'-DDE, and 4,4'-DDT had elevated HQs. The drainage ditch is located in an industrial area where elevated concentrations of PAHs would be expected as a result of fueling, aircraft engine exhaust, maintenance, and general runoff from runways, tarmac area, and parking lots. Additionally, based on total PAH concentrations in each of the eight samples, only one sample (IR86-SD108) contained total PAHs at a concentration above the PEC (MacDonald et al., 2000) and five of the eight samples contained total PAHs at concentrations below the threshold effect concentration (TEC), suggesting that impacts to populations of sediment biota would be limited. Sample IR86-SD108 was collected immediately downgradient of a culvert entering the drainage ditch. The culvert drains the tarmac area immediately west of locations where aircraft are parked, hangar Building AS504, and the parking lot north of Building AS504. Accumulation of PAHs in this location from general use unrelated to a release would not be unexpected, particularly because TOC concentrations were elevated (38,000 mg/kg to 90,000 mg/kg) in sediment samples. For pesticides, total DDT concentrations were less than the PEC (0.572 mg/kg) in all eight samples, suggesting that risk to benthic invertebrate populations is not significant. Additionally, the pesticide concentrations are likely a result of historical routine application at MCB CamLej. As discussed in Section 8.5.6, pesticide concentrations were less than the Site 89 anthropogenic background concentration of 0.325 mg/kg. Consequently, risks from PAHs and pesticides are considered insignificant.

No ESVs were available for 21 constituents during Step 2. Supplemental screening levels were identified for these analytes as available for Step 3. The maximum concentrations of 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and heptachlor epoxide were less than the supplemental ESVs provided in TCEQ (2006). The EPCs of cobalt, iron, and manganese were less than the supplemental screening values found in Persaud et al., (1993). The HQs for endrin aldehyde and aluminum were less than 1 based on supplemental ESVs obtained from USEPA (2003b) and Ingersoll et al. (1996), respectively. These constituents pose no significant risk to lower trophic level ecological receptors. It should also be noted that acetone and butylbenzylphthalate are common laboratory artifacts (CDTSC, 2006) and are not likely the result of site-related activities.

Supplemental screening values for endosulfan I, gamma-chlordane, barium, selenium, and vanadium were available in Buchman (2008). The maximum concentration of gamma-chlordane and the EPCs of barium and vanadium were less than the supplemental ESV. However, the HQs for endosulfan I and selenium were 1.6 and 28, respectively. Endosulfan I had a low magnitude of exceedance and is not likely to pose a significant risk to lower trophic level receptors.

Selenium concentrations were elevated in one location (IR86-SD108) and could pose an isolated risk to lower trophic level receptors. All other concentrations were relatively low. Additionally, a conservative estimate of the mean could not be calculated for the refined screening. When using the arithmetic mean concentration, the resulting HQ is 4.25. This isolated selenium concentration is likely to have only limited impact on the benthic community as a whole. Therefore, because the drainage ditch was spatially well-represented and only one location had an elevated concentration, risk to the benthic invertebrate community is considered insignificant.

8.5.8 Risk from Food Chain Transfer

Constituents with HQs greater than 1 in Step 3, considered potentially bioaccumulative based on Table 4-2 in USEPA (2000b), and detected were included in the food chain models. Analytes that were evaluated based on direct exposure in Step 3 and did not pose a potential risk were assumed to be unlikely to pose a risk to upper trophic level receptors, and food chain modeling was not conducted for these analytes. Food chain modeling was conducted for the terrestrial receptors using maximum surface soil and surface water concentrations from each surface water body and for semi-aquatic receptors foraging in the western pond and in the drainage ditch based on maximum sediment and surface water concentrations. If food chain modeling resulted in an HQ greater than 1.0 based on maximum concentrations, the analyte was further evaluated using a conservative estimate of the mean and an arithmetic mean, as needed and as available. COPCs evaluated for surface soils included cadmium, copper, lead, benzo(a)pyrene, and fluoranthene. Sediment COPCs in the western pond included cadmium, lead, zinc, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and alpha-chlordane. Finally, the sediment COPCs identified for the drainage ditch were cadmium, copper, lead, selenium, silver, zinc, 4,4'-DDE, 4,4'-DDT, endosulfan I, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene.

Receptors selected for the terrestrial evaluation include the meadow vole, white-footed mouse, short-tailed shrew, red fox, mourning dove, American robin, Canada goose, and red-tailed hawk. Semi-aquatic receptors that may use the western pond and drainage ditch include the raccoon, barn swallow, and great blue heron. Risks to these upper trophic level receptors were evaluated by modeling exposure to chemicals via the ingestion of constituents which have accumulated in prey. Incidental ingestion of soil was also included when calculating exposure. Dietary items for which tissue concentrations were modeled included plants, invertebrates, and mammals. The uptake of chemicals from the abiotic media into these food items was modeled based upon conservative assumptions.

8.6 Exposure Assessment

8.6.1 Exposure Point Concentrations

EPCs are the environmental media concentrations of COPCs that receptors are assumed to encounter in an exposure area. Risk calculations were initially developed using the maximum concentration. If that screening failed (lowest observable adverse effect level [LOAEL]-based HQ greater than 1), risk was re-evaluated using a conservative estimate of the mean and/or an arithmetic mean. Conservative estimates of the mean were calculated using ProUCL Version 4.0.0.4 (USEPA, 2009d). To be conservative, the maximum detected value or the maximum detection limit between the field duplicate and native sample was used when calculating UCLs. When a conservative estimate of the mean could not be calculated, an arithmetic mean was used.

Exposure Parameters

Receptor-specific inputs are presented in **Appendix J-2**. Minimum adult body weights and maximum food ingestion rates from the scientific literature were used for each receptor. It was assumed that chemicals were 100 percent bioavailable to the receptor and that each receptor spent 100 percent of its time on the site (i.e., an area use factor [AUF] of 1.0 was assumed).

Concentrations in Food Items

The concentrations of COPCs in food items were estimated rather than measured. For the purposes of exposure estimation, partitioning of constituents from environmental media to prey was estimated from literature values. The conservative model assumptions included bioaccumulation factors (BAFs) from the literature. The BAFs and other uptake or biotransfer factors used to estimate constituent concentrations in food items are provided in **Appendix J-2**. In all cases, it was assumed that tissue uptake occurs under steady-state conditions.

Calculation of Chemical Intakes

Dietary exposure includes multiple pathways and requires modeling. The end product or exposure estimate resulting from exposure modeling for wildlife is a dosage (amount of chemical per kilogram receptor body weight per day [mg/kg-day]). Dietary exposure from food and incidental ingestion of soil was estimated using a generalized exposure model modified from Suter et al. (2000):

$$E_j = \left[\left(Med_{jk} * Pk * FIR \right) + \left(\sum_{i-1}^{N} B_{ij} * P_i * FIR \right) \right] * AUF$$

where:

E_j	= total dietary exposure (mg/kg-day)
Med_{jk}	= concentration of chemical (j) in medium (k) (mg/kg dry weight)
P_k	= ingestion rate of medium (k) as proportion of diet
FIR	= species-specific food ingestion rate (kg food/kg body weight/d)
B_{ij}	= concentration of chemical (j) in biota type (i) (mg/kg dry weight)
P_i	= proportion of biota type (i) in diet
AUF	= area use factor (unitless)

Effects Assessment

Compilation of Toxicity Data

Currently available toxicological data were evaluated and a range of potential effects was determined by using procedures recommended by USEPA (1997b). Data were extracted from original literature sources (when available) to verify levels of effects, quality of study design, magnitude of dose, and other study parameters. Sources for toxicity data included the following:

- Toxicological Benchmarks for Wildlife, produced for the Department of Energy at Oak Ridge National Laboratories (ORNL) (Sample et al., 1996)
- Peer-reviewed scientific literature
- The National Institutes of Health (NIH) ATSDR Toxicity Profiles and reports

Ingestion toxicity reference values (TRVs) were selected for both chronic no observed adverse effect level (NOAEL) and chronic LOAEL endpoints. Because the ERA is based upon population- or community-level effects, no intraspecies uncertainty factors were applied. Taxonomic class-type uncertainty factors were also not applied because the TRVs selected were typically derived based upon data from a broad range of taxonomic groups. Maximum Acceptable Toxicant Concentrations (MATCs), defined as the geometric mean of the NOAEL and LOAEL, were also calculated.

Food chain COPCs were identified based upon a comparison of maximum exposure doses from site-specific food chain modeling with the NOAEL-, MATC-, and LOAEL-based ingestion TRVs. An exceedance of the LOAEL was considered to pose possible risk and these analytes were further evaluated qualitatively.

Risk Results and Characterization

The results of the food chain modeling for terrestrial wildlife exposed to maximum concentrations in surface soil and surface water at Site 86 are presented in **Table J-17**. The red fox and the red-tailed hawk had NOAEL- and LOAEL-based HQs less than 1. While NOAEL-based HQs for the meadow vole, white-footed mouse, short-tailed shrew, red fox, American robin, Canada goose, and red-tailed hawk exceeded 1, the LOAEL-based HQs were less than 1. The mourning dove had an LOAEL-based HQ of 1.02 for lead, which is considered a low magnitude of exceedance. When using the EPC, the LOAEL-based HQ for lead is less than 1 (**Table J-18**). The other constituents had LOAEL-based HQs less than 1. Therefore, exposure of birds and mammals to concentrations of COPCs in soil and surface water does not pose a significant risk to upper trophic level receptors.

The results of the food chain modeling for semi-aquatic wildlife exposed to maximum concentrations in surface water and sediment in the western pond at Site 86 are presented in **Table J-19**. The barn swallow had NOAEL-based HQs above 1 for cadmium, lead, and zinc. However, the LOAEL-based HQs for cadmium and lead were less than 1. The LOAEL-based HQ for zinc was 2.21. When using the arithmetic mean, the LOAEL-based HQ is 1.19 (**Table J-20**). Because this assessment used highly conservative assumptions (minimum body weight, maximum food ingestion rate, and foraging in the pond 100 percent of the time) and the magnitude of exceedance was low, risk to the barn swallow is considered insignificant. It should be noted that the barn swallow has a home range of approximately

200 hectares (ha) (Sample et al., 1997) and it is highly unlikely that this pond would constitute its only foraging ground. Consequently, the exposure of birds and mammals to concentrations of COPCs in the western pond does not pose significant risk.

The food chain modeling results for semi-aquatic wildlife exposed to maximum concentrations in surface water and sediment in the drainage ditch at Site 86 are presented in **Table J-21**. The great blue heron had NOAEL- and LOAEL-based HQs equal to or less than 1. The raccoon had NOAEL- and LOAEL-based HQs using the maximum concentration for selenium of greater than 1 (HQ = 4.73). When based on the arithmetic mean (**Table J-23**), LOAEL-based HQ for the raccoon exposed to selenium is less than 1. The barn swallow had NOAEL-based HQs (using maximum concentration) greater than 1 for cadmium and lead, but the LOAEL-based HQs were less than 1. However, both the NOAEL- and LOAEL-based HQs for copper, selenium, and zinc (based on maximum concentrations) were greater than 1.0. When using the EPC (**Table J-22**) for copper and zinc, the LOAEL-based HQs for the barn swallow exposed to copper and zinc were above 1 but had relatively low magnitudes of exceedance (HQs less than 3). When based on the arithmetic mean (**Table J-23**), the resulting LOAEL-based HQs for the barn swallow exposed to copper, selenium, and zinc were all less than 2. As previously noted in Section 8.4.7, the selenium concentrations in the drainage ditch were relatively low, with the exception of sample location IR86-SD108.The food chain model also assumes that the raccoons and barn swallows are foraging only in the drainage ditch onsite. However, the home ranges for the raccoon and barn swallow are 289 ha and 200 ha, respectively (USEPA, 1993; Sample et al., 1997). These animals are likely to forage in other areas and the COPCs from the Site 86 drainage ditch would constitute only a small portion of their dietary intakes. Therefore, exposure of birds and mammals to COPCs in the drainage ditch surface water and sediment does not pose a significant risk.

8.6.2 Uncertainty

Uncertainties are inherent in all RAs. In general, risks are over-estimated in this evaluation through the use of conservative exposure, effects, and risk characterization assumptions described in the previous sections. A qualitative evaluation of the major general uncertainties associated with this assessment is presented below.

Effects Assessment Uncertainties

Literature-derived toxicity data based on laboratory studies were the only toxicity data available to evaluate risk to all receptor groups. It was assumed that effects observed in laboratory species were indicative of effects that would occur in wild species. The validity of this assumption is unknown.

The use of UFs in the development of TRVs is designed to ensure that the TRV is a conservative estimate of a toxicological effect level or endpoint. However, there is some additional uncertainty associated with extrapolating TRVs between toxicological endpoints, species, duration, and study conditions to site conditions.

Undetected chemicals for which no toxicological data were available were identified as posing no risk. Although some uncertainty is associated with this approach, it was assumed that if chemicals were present at ecologically relevant levels, they would be detected in some samples. A lack of toxicological data also demonstrates that these chemicals

historically have not been identified as significant ecological risk drivers. The undetected status and lack of toxicological data indicate that these chemicals are unlikely to pose an ecological risk.

The TRVs developed from literature studies are usually based on a highly soluble and bioavailable form of the chemical. It is generally accepted that chemicals present in environmental media are not likely to be in a highly soluble form and, due to physical and chemical processes in the environment, are likely to be far less than 100 percent bioavailable. This difference between literature studies and site conditions may contribute to an over-estimation of potential exposure and risks from the COPCs.

Standard industry laboratory methods of analysis were used for the development of detection limits. In some instances, the methods produced detection limits that were higher than the ESVs. This is considered an acceptable uncertainty. Because these chemicals were not detected, they are not known to be present onsite, but the potential for risks cannot be totally discounted because the reporting limits for at least some samples are higher than the screening values.

Exposure Assessment Uncertainties

Exposure Media and Pathways

Wildlife doses were estimated based on the ingestion pathway only. This was due to limitations in the ERA field with regard to adequately evaluating the volatilization (inhalation) and dermal absorption pathways. Although these pathways would not be expected to contribute significantly to the overall dose that receptors might receive from COPCs at this site, this is nonetheless an uncertainty inherent in the assessment.

Bioavailability

The exposure dose estimates in this assessment assume that 100 percent of the chemical concentrations to which receptors are exposed are in the bioavailable form. However, most chemicals will not be 100 percent bioavailable. In cases where bioavailability is less than 100 percent, risk is over-estimated.

The exposure concentrations used in the evaluation of trophic transfer were assumed to remain constant for the duration of exposure. Physical, chemical, and biological processes that could reduce chemical concentrations and their bioavailability over time were not factored into the calculation of the exposure concentrations. Use of this additional conservative assumption is also likely to over-estimate exposure to the COPCs.

Analytical chemistry data collected within the exposure areas at Site 86 were assumed to adequately represent the exposure to wildlife and exposure concentrations were assumed to represent the distribution of constituents present. These assumptions could either under- or over-estimate risk.

Receptor Life History Data

No avian or mammalian life history data specific to the site were available; therefore, exposure parameters were either modeled based on allometric relationships (e.g., food ingestion rates) or were based on data from these same species in other portions of their range. Because diet composition, as well as food, water, and soil ingestion rates, can differ

among individuals and locations, published parameter values may not accurately reflect conditions at the site. Consequently, risk may be either over- or under-estimated.

Dietary Composition

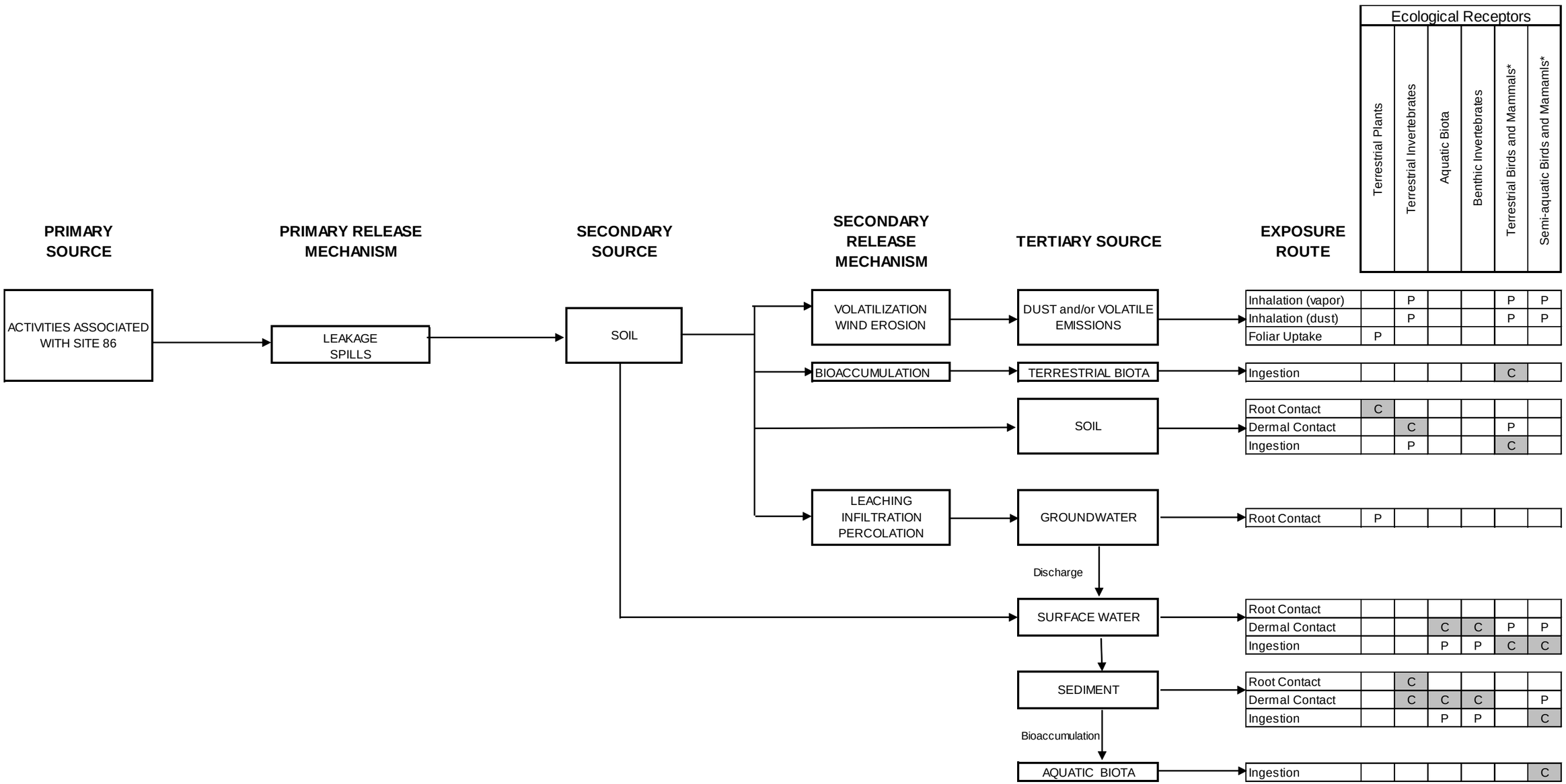
Dietary compositions were simplified for the site receptors to estimate concentrations in food items using bioaccumulation models. It was assumed that concentrations were similar in comparable food types. The validity of this assumption is unknown. Consequently, risk may be either over- or under-estimated.

Estimating Prey Tissue Concentration

There is uncertainty associated with the estimated chemical concentrations in tissue of prey. Prey tissue concentrations were estimated using literature-based values for all dietary items. Potential risks based on these tissue concentration estimates, therefore, could either be over- or under-estimated.

8.6.3 Conclusions

HQs were generally low for most receptors under most exposure scenarios in the Step 3 refinement. Based on the refined evaluation, no soil or surface water analytes are considered to pose a significant risk to lower or upper trophic level receptors. While some analytes in sediment (PAHs and pesticides) and groundwater (silver) may pose isolated risk to lower trophic level receptors, the overall risk is not considered significant to either lower or upper trophic level receptors. Based on quantitative and qualitative analysis, risks to populations of ecological receptors exposed to soils, surface water, and sediment at or near Site 86 are not considered significant.



C - Pathway considered complete for purposes of ecological risk assessment

P - Pathway considered potentially complete, but insignificant

Pathways evaluated quantitatively in ecological risk assessment

* Terrestrial birds and mammals include: robin, Canada goose, mourning dove, red-tailed hawk, short-tailed shrew, meadow vole, white-footed mouse, and red fox. Semi-aquatic birds and mammals include: great blue heron, barn swallow, and raccoon.

Figure 8-1
Conceptual Site Model of Ecological Exposures at Site 86
Operable Unit No. 20 (Site 86)
Expanded Supplemental Remedial Investigation
MCB CamLej
North Carolina

CH2MHILL

Generated by: S. Kent/ATL Checked by: T. Grim/CLT

SECTION 9

Conclusions and Recommendations

The ESRI has sufficiently defined the nature and extent of contamination and potential risks to human health and the environment at Site 86. Conclusions of the ESRI and recommendations for site management are presented below.

9.1 Conclusions

9.1.1 Nature and Extent of Contamination

Groundwater

The primary constituents present in groundwater above the NCGWQS are the chlorinated VOCs TCE, cis-1,2-DCE, and VC. Other constituents detected above the NCGWQS in groundwater include the VOCs PCE, benzene, MTBE, and 1,1-DCE; the SVOCs benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and the metals chromium and iron.

The horizontal extents of impacts in the surficial and upper Castle Hayne aquifer have been delineated to their respective NCGWQS. PCE detected in one monitoring well screened in the middle Castle Hayne (IR86-MW19DW) appears to be localized and is not indicative of a new release. The detected concentrations of SVOCs in the middle Castle Hayne aquifer appear to be localized and are within 0.5 µg/L of their respective NCGWQS.

Surface and Subsurface Soil

VOCs, SVOCs, pesticides, and metals are present in the soil at concentrations that exceed the applicable soil screening levels. The magnitude of the SVOC and pesticide exceedances is generally low, and the occurrence and distribution of these compounds appear to be related to the industrial nature of the site. The metals appear to be widespread and at concentrations that are generally consistent with naturally occurring levels. SVOC impacts are limited to the surface soils and pesticide impacts in the subsurface soils are limited to one sample location. VOC impacts are related to several UST site located within the Site 86 boundary and appear to be limited to the former UST basins. The VOC impacts are being addressed under the UST Program through the implementation of LURs.

Surface Water and Sediment

SVOCs, pesticides, and metals were detected above the applicable screening criteria in the surface water and sediment collected from the western storm water retention pond and drainage ditch.

The magnitude of the SVOC and pesticide exceedances in the surface water and sediment is generally low, and the occurrence and distribution of these compounds appear to be related to the industrial nature of the site. The metals appear to be widespread and at concentrations that are generally consistent with naturally occurring levels.

9.1.2 Fate and Transport

Source Areas

SVOCs, pesticides, and metals were detected in sediment, surface soil, subsurface soil and surface water collected from the industrial, flight line, and common areas at Site 86 (**Figure 5-1** through **5-3);** however, their concentrations are not indicative of a single historic or on-going release. Rather, they appear to be associated with naturally occurring levels (in the case of metals) or the site wide land use or application of pesticides and other chemicals. VOCs detected in soil are related to former USTs located within the Site 86 boundary.

Based on the chemical and physical data collected during the ESRI activities, the chlorinated VOCs detected in the three groundwater plumes are likely a result of the following:

- Western plume-likely originated near SWMU 303/318 from multiple surficial releases associated with historic aircraft maintenance activities (AS 515) and former Helicopter Wash Rack-Building AS513.
- Central plume-likely originated near building AS510 from several surficial releases associated with historic aircraft maintenance activities.
- Eastern plume-likely associated with an open, unlined drainage ditch that is a release point for a majority of the surface water run-off collected by the site's stormwater conveyance network.

Contaminant Transport

Surface water, sediment, and soil impacts at Site 86 are generally immobile (unless physically transported by storms or anthropogenic processes), and are not necessarily related to impacted groundwater. Based on the physical and chemical properties of the contaminants detected in these media, they are not expected to migrate to any receptors and will likely degrade in situ.

Vertical migration of VOCs is occurring at Site 86, as evidenced by the distribution of VOCs throughout the surficial and upper Castle Hayne aquifers, and is supported by the presence of downward vertical gradients between the two aquifers. As noted in Section 5, VOCs have been detected at concentrations above the NCGWQS in groundwater samples collected from monitoring wells screened in both aquifers.

The New River is located downgradient of the eastern boundary of Site 86, and is the ultimate receptor for surface water and groundwater discharge from the site. During the ESRI field activities, several downgradient monitoring wells were installed in the surficial, upper Castle Hayne, and middle Castle Hayne aquifers to define the lateral extent of contamination. VOCs were not detected above the NCGWQS in the downgradient monitoring wells.

Groundwater Predictive Modeling

The groundwater transport model, generated as part of the ESRI, suggests that the VOC plumes will migrate toward the New River. The simulated chemographs presented on **Appendix J-Figures 5-4** and **5-5** indicate that concentrations of TCE and VC in groundwater near the New River are within 1 µg/L of their respective NCGWQS. This trend suggests that TCE and VC could reach the New River at detectable concentrations as a result of the

existing plumes beneath Site 86, even without continuing sources. However, by that time, these concentrations are predicted to be below the current surface water standards (NCSWQS) of 30 µg/L and 2.4 µg/L, respectively.

9.1.3 Human Health Risk Assessment

A HHRA was conducted to evaluate the potential human health risks associated with current and hypothetical future receptors.

The major conclusion of the HHRA was that current site use and site-related impacts do not pose an unacceptable risk to human health. Contact with surface soil, surface water, and sediment would result in non-carcinogenic hazards and carcinogenic risks below or within USEPA target levels. Additionally, an evaluation of the potential VI pathway at Site 86 was conducted, and concluded that VI is not a current or future exposure pathway of concern.

However, potential future contact with surface soils within the flight line area by hypothetical future residents may result in risk or hazards above USEPA's acceptable risk range and hazard levels. The COC contributing to the elevated risk in the surface soil is chromium. Additionally, potential future contact with surficial and Castle Hayne aquifer groundwater by hypothetical future residents and industrial workers may result in risk or hazards above USEPA's acceptable risk range and hazard levels. The primary COCs contributing to the elevated risk in groundwater are the chlorinated VOCs (PCE, TCE, cis-1,2-DCE, and VC), benzene, chromium, and four PAHs (benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene).

9.1.4 Ecological Risk Assessment

An ERA was completed to evaluate whether past site operations have adversely affected terrestrial and aquatic communities on or adjacent to Site 86.

Overall, the ERA concluded that no unacceptable risks to ecological receptors are present at Site 86. HQs were generally low for most receptors under most exposure scenarios. Specifically, no soil or surface water analytes are considered to pose a risk to ecological receptors. While some analytes in sediment (PAHs and pesticides) and groundwater, which may discharge to surface water, (silver) may pose an isolated risk to certain ecological receptors, the overall risk is to ecological receptors is considered acceptable.

9.2 Recommendations

Based on the results and conclusions of the ESRI performed at Site 86, a Feasibility Study is recommended. The Feasibility Study will identify remedial action objectives; identify potential treatment, resource recovery, and containment technologies that will satisfy these objectives; screen the technologies based on their effectiveness, implementability, and cost; assemble the technologies into treatment alternatives; and analyze the alternatives against evaluation criteria.

SECTION 10

References

AH Environmental Consultants (AHEC). 2002. *Wellhead Protection Plan, 2002 Update.* August.

Baker Environmental, Inc. (Baker). 1996. *Final Remedial Investigation Report, Operable Unit No. 6 (Site 86), Marine Corps Base Camp Lejeune, North Carolina.* August.

Baker. 1998. *Final Feasibility Study Report, Operable Unit No. 6. (Site 86).* June.

Baker. 2001. *Final Base Background Study (Soil), Marine Corps Base Camp Lejeune, North Carolina*. April.

Baker. 2003. *Final Amended Remedial Investigation Report, Operable Unit No. 6, Site 86 – Tank Area AS419-AS421, Marine Corps Base, Camp Lejeune, North Carolina.* May.

Baker. 2005. *Final Phase II SWMU Confirmatory Sampling Report, MCB Camp Lejeune, North Carolina.* April.

Bouwer, H. and R.C. Rice, 1976. *A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells*, Water Resources Research, vol. 12, no. 3, pp. 423-428.

Buchman, M. F. 2008. *National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables.* Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration. Seattle, WA. 1999, Last Revised November.

California Department of Toxic Substance Control (CDTSC). 2006. *Environmental Chemistry Laboratory User's Manual.* Appendix C.

Cardinell, A. P., S. A. Berg, and O. B. Lloyd, Jr., 1993. *Hydrogeologic Framework of U.S. Marine Corps Base at Camp Lejeune, North Carolina.* Water Resources Investigations Report 93-4049. U.S. Geological Survey.

CH2M HILL, Baker Environmental, Inc., and CDM (CH2M HILL/Baker/CDM). 2003. *Final Amended Remedial Investigation, Operable Unit No. 20, Site 86- Tank Area AS419-AS421, Marine Corps Base Camp Lejeune, North Carolina.* May.

CH2M HILL. 2003. *Technology Evaluation Operable Unit No. 20 (Site 86)*. March.

CH2M HILL. 2005. *Optimization of the Long-Term-Monitoring Program, Marine Corps Base Camp Lejeune, North Carolina.* September.

CH2M HILL. 2006a. *SWMUs 3003/318 RCRA Facility Investigation Report, RCRA Program, Marine Corps Base, Camp Lejeune, North Carolina.* March.

CH2M HILL. 2006b. *Pilot Study Report, Site 86, Operable Unit No. 20, Marine Corps Base, Camp Lejeune, North Carolina*. September.

CH2M HILL. 2007. *SupplementalRemedial Investigation Work Plan Site 86 - Operable Unit No. 20, Marine Corps Base Camp Lejeune, North Carolina.* January.

CH2M HILL. 2008a. *Master Project Plans, Marine Corps Base Camp Lejeune, Jacksonville, North Carolina.*

CH2M HILL. 2008b. *Final Vapor Intrusion Evaluation Work Plan, Marine Corps Base Camp Lejeune, Jacksonville, North Carolina.* June.

CH2M HILL. 2009a. *Sampling and Analysis Plan, Expanded Supplemental Remedial Investigation, Site 86 – Operable Unit No. 20, Marine Corps Air Station New River, Jacksonville, North Carolina.* October.

CH2M HILL. 2009b. *Final Vapor Intrusion Evaluation Report, Marine Corps Base Camp Lejeune, Jacksonville, North Carolina.* November.

Department of the Navy (Navy). 2003. *Navy Guidance for Conducting Ecological Risk Assessments.* Originally published April 5, 1999. Website version last updated February 28, 2003. http://web.ead.anl.gov/ecorisk/process/pdf/index.cfm.

Dewberry & Davis. 1991. *Technical Memorandum No. 2 Results of Field Investigation. Marine Corps Base, Camp Lejeune, North Carolina.* January.

Dolph, James. 2000. *Building AS510 Literature Search Marine Corps Air Station, New River Camp Lejeune North Carolina*. Prepared for the Department of the Navy, Naval Facilities Engineering Command, Atlantic Division, Norfolk, Virginia. October 15.

Engineering and Environment Inc., 2004. *2004 Annual Monitoring Report, Operable Unit No. 20-Site 86, Marine Corps Base, Camp Lejeune, North Carolina*.

Environmental Simulations, Inc. *Groundwater Vistas Website.* 2007.http://www.groundwater-vistas.com/.Accessed: July 1, 2010.

Environment & Regulatory Consultants, Inc. ERC, 1992. *Closure Report, Marine Corps Air Station, Building AS-410, New River, North Carolina.* September.

Fetter, C. W. 1986. *Applied Hydrogeology.* Charles E. Merrill Publishing Co., Columbus Ohio.

Foster, S. A., and P. C. Chrostowski. 1987. *Inhalation Exposures to Volatile Organic Contaminants in the Shower*. ICF-Clement Associates, Inc. Washington, D.C.

Groundwater Technology Government Services (GSI), 1993. *Three Well Site Check Report, Building AS-410 South, Marine Corps Air Station, New River, NC.* May.

Groundwater Technology Government Services (GSI), 1994. *Five Additional Well Site Check Report, Building AS-410 South, Marine Corps Air Station, New River, NC.* February.

Harbaugh, A.W., E.R. Banta, M.C. Hill, and M.G. McDonald. 2000. *MODFLOW-2000, The U.S. Geological Survey Modular Ground-Water Model – User Guide to Modularization Concepts and the Ground-Water Flow Process*. USGS Open-File Report 00-92.

Harned, D. et al. 1989. *Assessment of Hydrologic and Hydrogeologic Data at Camp Lejeune Marine Corps Base, North Carolina*. U.S. Geological Survey Water-Resources Investigation Report 89-4096, 64p.

Heath, R. 1989. *Basic Groundwater Hydrology*. U.S. Geological Survey WSP 2220.

Ingersoll, C. G., P. S. Haverland, E. L. Brunson, T. J. Canfield, F. J. Dwyer, C. E. Henke, N. E. Kemble, D. R. Mount, and R. G. Fox. 1996. Calculation and evaluation of sediment effect concentrations for the amphipod *Chironomus riparius*. *Journal of Great Lakes Research* 22:602-623.

J. A. Jones Environmental Services Company. 2002. *Annual Monitoring Report, Request for No Further Action Status-CAP Implementation, Building AS-428, Marine Corps Air Station, New River, North Carolina*. January.

MacDonald, D.D., C.G. Ingersoll, and T.A. Beger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Archives of Environmental Contamination and Toxicology. Vol 39: 20-31.

National Priorities List Site. Narrative Listing. 1995.

North Carolina Department of Environment and Natural Resources (NCDENR). 2003. *Guidelines for Performing Screening Level Ecological Risk Assessments within the North Carolina Division of Waste Management*.

NCDENR. 2010. *NC and EPA Criteria Table. NC2B Surface Water Standards, February 2010.* http://portal.ncdenr.org/web/wq/ps/csu (Accessed May 2010).

O'Brien & Gere, Inc. 1992. *Site Assessment of Tanks AS419 - AS421, Marine Corps Air Station, New River, North Carolina*. Project No. 62470-90-R-76. June.

Persaud, D., R. Jaagumagi, and A. Hayton. 1993. *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario.* Water Resources Branch, Ontario Ministry of the Environment. Toronto.

Peters, Glenn. 2009. Former Marine, Personal communication, July.

R.E. Wright & Associates Inc., 1994 *Three Well Site Check, Marine Corps Base, Camp Lejeune, UST AS-428.* November.

Richard Catlin & Associates (Catlin). 1994. *Leaking Underground Storage Tank*, *Comprehensive Site Assessment, Building AS-410, Marine Corps Air Station, New River, North Carolina*. October.

Catlin. 1996. *Leaking Underground Storage Tank*, *Comprehensive Site Assessment, Building AS-428, Marine Corps Air Station, New River, North Carolina.* May.

Catlin. 2007. *AS-510 Phase I Limited Site Assessment for Building AS-510, Marine Corps Air Station, New River, North Carolina.* May.

Sample, B. E., D. M. Opresko, and G. W. Suter II. 1996. *Toxicological Benchmarks for Wildlife*: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, Tennessee. ES/ER/TM-86/R3.

Sample, B. E., M. S. Aplin, R. A. Efroymson, G. W. Suter II, and C. J. E. Welsh. 1997. *Methods and tools for estimation of the exposure of terrestrial wildlife to contaminants.* Environmental Sciences Division, Oak Ridge National Laboratory. ORNL/TM-13391.

Suter, G. W., II, R. A. Efroymson, B. E. Sample, and D. S. Jones. 2000. *Ecological Risk Assessment for Contaminated Sites.* CRC Press.

Texas Commission on Environmental Quality (TCEQ). 2006. *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites In Texas RG-263 (Revised).* Remediation Division. January.

United States Department of Agriculture, Soil Conservation Service. 1992. Soil Survey of Onslow County, North Carolina.

United States Environmental Protection Agency (USEPA). 1986. *Guidelines for Health Risk Assessment of Chemical Mixtures*. Federal Register Vol. 51 34014-34041. September 24, 1986.

USEPA. 1989. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Part A, Interim Final.* Office of Solid Waste and Emergency Response. EPA/540/1-89/002. December.

USEPA. 1991. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Part B: "Development of Risk-based Preliminary Remedial Goals"*. OSWER Directive 9285.7-01B. December 13.

USEPA. 1993. *Wildlife exposure factors handbook. Volume I of II.* EPA/600/R-93/187a.

USEPA. 1997a. *Health Effects Assessment Summary Tables, Annual Update*. Environmental Criterion Assessment Office, Office of Research and Development, Cincinnati, OH. July.

USEPA. 1997b. *Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments. Interim Final.* EPA 540-R-97-006. June.

USEPA. 1998. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water.* EPA 600-R-98-128. September.

USEPA. 1999. *Use of Monitored Natural Attenuation at Superfund RCRA Corrective Action, and Underground Storage Tank Sites*. Office of Solid Wastes and Emergency Response.

USEPA. 2000a. *Supplemental Guidance to RAGS: Region 4 Bulletins*, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000: http://www.epa.gov/region 4/waste/oftecser/healthbul.htm Office of Technical Services, USEPA Region 4. May.

USEPA. 2000b. *Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment: Status and Needs.* Bioaccumulation Analysis Workgroup, Washington D.C. EPA/823/R-00/001.

USEPA. 2001a. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments*. Office of Solid Waste and Emergency Response. EPA 540-R-97-033. OSWER 9285.7-01D. December.

USEPA. 2001b. *Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment*. Originally published November 1995. Website version last updated November 30, 2001: http://www.epa.gov/region4/waste/ots/ecolbul.htm.

USEPA. 2002. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*. OSWER 9355.4-24. December.

USEPA. 2003a. *Human Health Toxicity Values in Superfund Risk Assessments.* OSWER Directive 9285.7-53. December.

USEPA. 2003b. *Region 5 RCRA Ecological Screening Levels.* http://www.epa.gov/reg5rcra/ca/ESL. August 22.

USEPA. 2004. *Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final*. OSWER 9285.7-02EP. July.

USEPA. 2005a. *Guidelines for Carcinogenic Risk Assessment*. EPA/630/P-03/001F. March 2005.

USEPA. 2005b. *Supplemental Guidance for Assessing Cancer Susceptibility from Early-Life Exposure to Carcinogens*. Risk Assessment Forum, Washington, DC. EPA/630/R-30/003F. http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=160003

USEPA. 2006. *Derivation of RBCs for Carcinogens that Act Via a Mutagenic Mode of Action and Incorporate Default ADAFs.* Region III. October.

USEPA. 2009a. *Integrated Risk Information System (IRIS) Database.*

USEPA. 2009c. *2009 Edition of the Drinking Water Standards and Health Advisories*. Office of Water. EPA 816-F-09-004.

USEPA. 2009d. *ProUCL Version 4.00.04 User Guide.* Draft. EPA/600/R-07/038. February.

USEPA. 2009e. *Ecological Soil Screening Levels.* http://www.epa.gov/ecotox/ecossl/

USEPA. 2010. *Regional Screening Levels for Chemicals at Superfund Sites.* November.

Weidemeier, Todd, et al. 1996. *Draft Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater*. Air Force Center for Environmental Excellence. San Antonio, Texas, November 1996.

Winner, M.D. and R.W. Coble. 1989. *Hydrogeologic Framework of the North Carolina Coastal Plain Aquifer System*. United States Geologic Survey Water-Resources Investigations Report 87-690.

Zheng, C., and P. P. Wang. 1999. MT3DMS: *A Modular Three-Dimensional Multispecies Transport Model for Simulation of Advection, Dispersion, and Chemical Reactions of Contaminants in Groundwater Systems; Documentation and User's Guide.* Contract Report SERDP-99-1.

Appendix A
Historical Analytical Data

Preliminary Site Investigation (Dewberry and Davis, 1990)

TABLE 9

NEW RIVER AIR STATION WASTE OIL TANKS
LABORATORY RESULTS OF SOIL SAMPLES

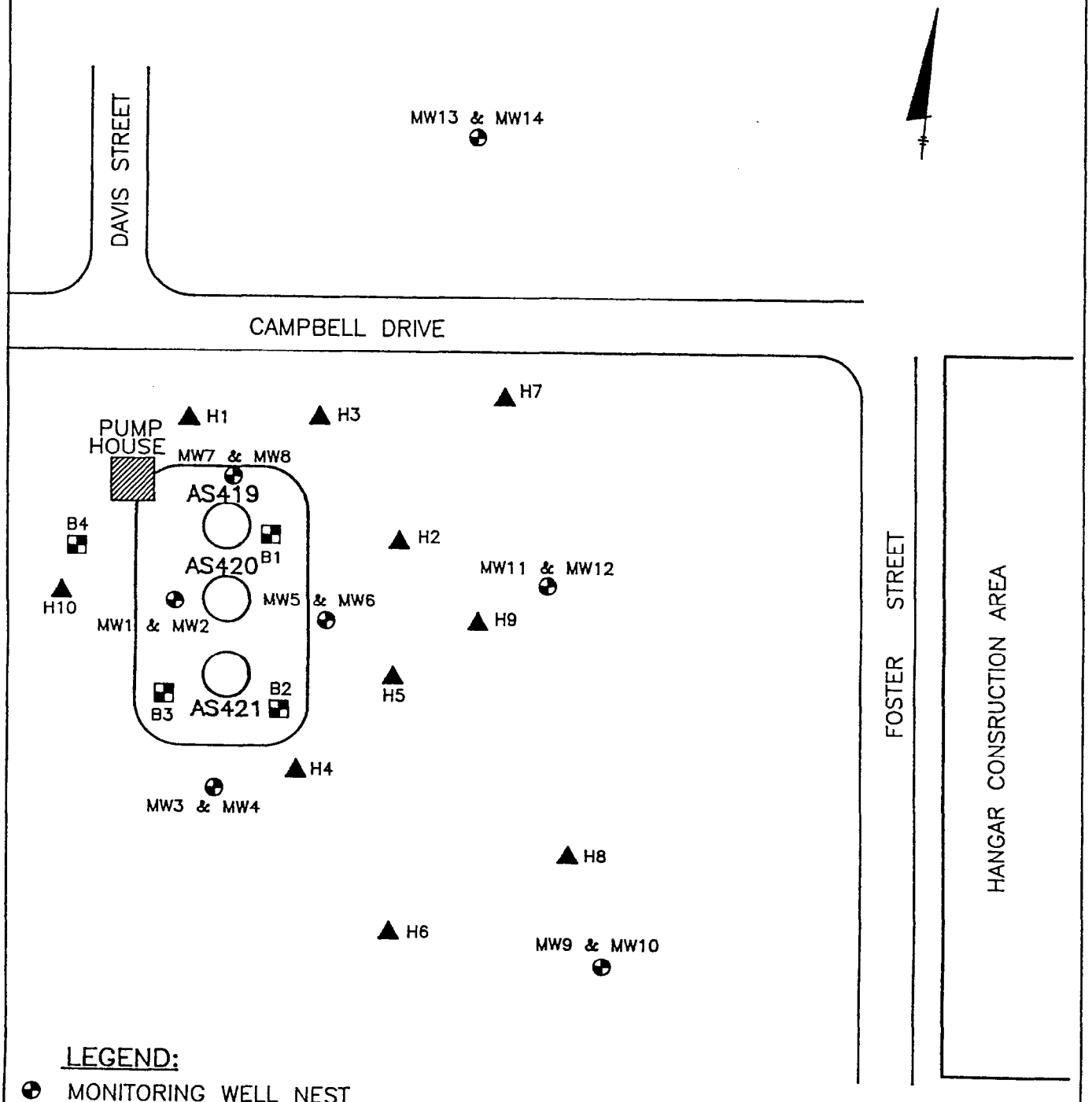
IPLE	DEPTH	TPH	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	V7	V17	V20	V25
SB-1	2'-4'	ND	--	--	--	--	--	--	--	--
SB-2	2'-4'	ND	--	--	--	--	--	--	--	--
B-3A	0'-1'	ND	--	--	--	--	--	--	--	--
B-3B	1'-5'	ND	--	--	--	--	--	--	--	--
SB-4	0'-4'	ND	ND	ND	ND	ND	0.006	0.030	0.035	0.061
SB-5	1'-2'	211 D 7000 IR 2750 IR*	--	--	--	--	--	--	--	--
B-6A	0.5'-2'	ND	--	--	--	--	--	--	--	--
B-6B	3.5'	ND	--	--	--	--	--	--	--	--
B-7A	0.5'-2'	70 D 7500 IR	--	--	--	--	--	--	--	--
B-7B	3.5'-4'	200 IR	--	--	--	--	--	--	--	--
SB-8	3'-5'	ND	--	--	--	--	--	--	--	--

ES:
1) ALL RESULTS ARE PRESENTED IN PARTS PER MILLION (PPM), WHICH IS ANALOGOUS TO MILLIGRAMS PER KILOGRAM.
2) TPH- TOTAL PETROLEUM HYDROCARBONS. TEST METHOD IS BY GAS CHROMATOGRAPH (GC); "D" - INDICATES DIESEL, "IR" - INDICATES INFRARED SPECTROPHOTOMETRY METHOD IN LIEU OF OR IN ADDITION TO GC METHOD. "*" - INDICATES TEST RESULTS FROM SECOND LABORATORY.
3) VOLATILE ORGANIC COMPOUNDS (VOC) ARE 34 COMMON PRIORITY POLLUTANTS. V7 - CHLOROFORM, V17 MEHYLENE CHLORIDE, V20 - 1,1,1 TRICHLOROETHANE, V25 - 1,1,2 TRICHLOROTRIFLUOROETHANE (FREON). INCLUDES BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES (BTEX). ALL OTHER COMPOUNDS WERE BELOW THEIR DETECTION LIMITS.
4) "ND" - NOT DETECTED. DETECTION LIMITS: TPH IN SOIL = 10 PPM, VOC AND BTEX IN SOIL = 0.005 PPM.

Site Assessment (O'Brien and Gere, 1992)

FIGURE 3

MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA
TANKS AS419 – AS421
SUBSURFACE INVESTIGATION LOCATIONS



O'BRIEN & GERE ENGINEERS, INC.

ENVIRONMENTAL TESTING SERVICES, INC.
P.O. Box 12715 • 888 Norfolk Square • Norfolk, Virginia 23502 • (804) 461-ETSI (3874) • Fax (804) 461-0379

ANALYTICAL SERVICES REPORT SHEET

Customer:
Ms. Tina Bickerstaff
O'Brien & Gere Engineers, Inc.
440 Viking Drive
Virginia Beach, Virginia 23452

Sample Description:
22 soil samples delivered on January 31, 1992 designated as New River Sampling Program.

RESULTS

I. **Total Petroleum Hydrocarbons**: California Method GC/FID.

Sample ID		TPH in mg/kg
B1	2-4	4.06
B1	6-8	<1.00
B2	4-6	124
B2	8-10	<1.00
B3	2-4	<1.00
B3	6-8	<1.00
B4	4-6	<1.00
B4	8-10	<1.00
MW2	2-4	<1.00
MW2	6-8	3.51
MW4	2-4	1.49
MW4	6-8	3.80
MW6	2-4	<1.00
MW6	6-8	<1.00
MW8	4-6	1.94
MW8	8-10	1.13
MW10	2-4	<1.00
MW10	6-8	<1.00
MW12	2-4	<1.00
MW12	6-8	1.26
MW14	2-4	<1.00
MW14	6-8	<1.00

Anne S. Burnett
Anne S. Burnett
Quality Control Officer

The information presented in the report represents the laboratory analyses performed on the samples provided to Environmental Testing Services, Inc. in accordance with the test methods requested and described above. Environmental Testing Services, Inc. is not responsible for any use of this information by its clients and shall not reveal these results to any person or entity without written authorization from its client. Any liability on the part of Environmental Testing Services, Inc. shall not exceed the sum paid by the client to Environmental Testing Services. Inc for the work performed.

OBG LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-5,6-92

DESCRIPTION:	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
SAMPLE NO.:	P1961	P1962	P1963	P1964	P1965	P1967
Benzene	<1.	<10.	<1.	6.	<1.	1.
Benzyl chloride	<10.	<100.	<10.	<10.	<10.	<10.
Bis (2-chloroethoxy) methane	<5000.	<50,000.	<5000.	<5000.	<5000.	<5000.
Bromobenzene	<5.	<50.	<5.	<5.	<5.	<5.
Bromodichloromethane	<1.	<10.	<1.	<1.	<1.	<1.
Bromoform	<10.	<100.	<10.	<10.	<10.	<10.
Bromomethane	<10.	<100.	<10.	<10.	<10.	<10.
Carbon tetrachloride	<1.	<10.	<1.	<1.	<1.	<1.
Chlorobenzene	↓	↓	↓	↓	↓	↓
Chloroethane	↓	↓	↓	↓	↓	↓
2-Chloroethylvinyl ether	<10.	<100.	<10.	<10.	<10.	<10.
Chloroform	<1.	<10.	<1.	<1.	<1.	<1.
1-Chlorohexane	<10.	<100.	<10.	<10.	<10.	<10.
Chloromethane	<10.	<100.	<10.	<10.	<10.	<10.
Chloromethylmethyl ether	<100.	<1000.	<100.	<100.	<100.	<100.
2-Chlorotoluene	<5.	<50.	<5.	<5.	<5.	<5.
4-Chlorotoluene	<5.	<50.	<5.	<5.	<5.	<5.
Dibromochloromethane	<1.	<10.	<1.	<10.	<1.	<1.
Dibromomethane	<10.	<100.	<10.	<10.	<10.	<10.
1,2-Dichlorobenzene	<5.	<50.	<5.	<5.	<5.	<5.
1,3-Dichlorobenzene	↓	↓	↓	↓	↓	↓
1,4-Dichlorobenzene	↓	↓	↓	↓	↓	↓
Dichlorodifluoromethane	<10.	<100.	<10.	<10.	<10.	<10.

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

OBG LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-5,6-92

DESCRIPTION:	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
SAMPLE NO.:	P1961	P1962	P1963	P1964	P1965	P1967
1,1-Dichloroethane	<1.	<10.	<1.	<1.	<1.	<1.
1,2-Dichloroethane						
1,1-Dichloroethylene						
1,2-Dichloroethylene (total)				94.		
Dichloromethane				<1.		
1,2-Dichloropropane				<10.		
cis-1,3-Dichloropropylene						
trans-1,3-Dichloropropylene						
Ethylbenzene				<1.		
1,1,2,2-Tetrachloroethane	<10.	<100.	<10.	<10.	<10.	<10.
1,1,1,2-Tetrachloroethane	<1.	<10.	<1.	<1.	<1.	<1.
Tetrachloroethylene		<10.	4.			
Toluene		350.	<1.			
1,1,1-Trichloroethane		<10.				
1,1,2-Trichloroethane				<10.		
Trichloroethylene				280.		4.
Trichlorofluoromethane				<1.		<1.
1,2,3-Trichloropropane						
Vinyl chloride						
Xylene (total)	<3.	<30.	<3.	<3.	<3.	<3.

Comments:

Methodology: USEPA,SW-846, November 1986, 3rd Edition

Certification No.: 315

Units: µg/l

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

OBG LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-6-92

DESCRIPTION:	MW-7	MW-8	MW-9	MW-9 Dup.	MW-10	MW-11
SAMPLE NO.:	P1968	P1969	P1970	P1971	P1972	P1973
Benzene	<1.	<1.	<1.	<1.	<10.	<1.
Benzyl chloride	<10.	<10.	<10.	<10.	<100.	<10.
Bis (2-chloroethoxy) methane	<5000.	<5000.	<5000.	<5000.	<50,000.	<5000.
Bromobenzene	<5.	<5.	<5.	<5.	<50.	<5.
Bromodichloromethane	<1.	<1.	<1.	<1.	<10.	<1.
Bromoform	<10.	<10.	<10.	<10.	<100.	<10.
Bromomethane	<10.	<10.	<10.	<10.	<100.	<10.
Carbon tetrachloride	<1.	<1.	<1.	<1.	<10.	<1.
Chlorobenzene	↓	↓	↓	↓	<10.	↓
Chloroethane	↓	↓	↓	↓	12.	↓
2-Chloroethylvinyl ether	<10.	<10.	<10.	<10.	<100.	<10.
Chloroform	<1.	<1.	<1.	<1.	<10.	<1.
1-Chlorohexane	<10.	<10.	<10.	<10.	<100.	<10.
Chloromethane	<10.	<10.	<10.	<10.	<100.	<10.
Chloromethylmethyl ether	<100.	<100.	<100.	<100.	<1000.	<100.
2-Chlorotoluene	<5.	<5.	<5.	<5.	<50.	<5.
4-Chlorotoluene	<5.	<5.	<5.	<5.	<50.	<5.
Dibromochloromethane	<1.	<1.	<1.	<1.	<10.	<1.
Dibromomethane	<10.	<10.	<10.	<10.	<100.	<10.
1,2-Dichlorobenzene	<5.	<5.	<5.	<5.	<50.	<5.
1,3-Dichlorobenzene	↓	↓	↓	↓	↓	↓
1,4-Dichlorobenzene	↓	↓	↓	↓	↓	↓
Dichlorodifluoromethane	<10.	<10.	<10.	<10.	<100.	<10.

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-6-92

DESCRIPTION:	MW-7	MW-8	MW-9	MW-9 Dup.	MW-10	MW-11
SAMPLE NO.:	P1968	P1969	P1970	P1971	P1972	P1973
1,1-Dichloroethane	<1.	<1.	<1.	<1.	150.	<1.
1,2-Dichloroethane	↓	↓	↓	↓	<10.	↓
1,1-Dichloroethylene	↓	↓	↓	↓	<10.	↓
1,2-Dichloroethylene (total)	↓	↓	↓	↓	76.	↓
Dichloromethane	↓	↓	↓	↓	<10.	↓
1,2-Dichloropropane	↓	↓	↓	↓	↓	↓
cis-1,3-Dichloropropylene	↓	↓	↓	↓	↓	↓
trans-1,3-Dichloropropylene	↓	↓	↓	↓	↓	↓
Ethylbenzene	↓	↓	↓	↓	↓	↓
1,1,2,2-Tetrachloroethane	<10.	<10.	<10.	<10.	<1000.	<10.
1,1,1,2-Tetrachloroethane	<1.	<1.	<1.	<1.	<10.	<1.
Tetrachloroethylene	↓	<1.	↓	↓	210.	↓
Toluene	↓	2.	↓	↓	<10.	↓
1,1,1-Trichloroethane	↓	<1.	↓	↓	↓	↓
1,1,2-Trichloroethane	↓	↓	↓	↓	↓	↓
Trichloroethylene	↓	↓	↓	↓	77.	↓
Trichlorofluoromethane	↓	↓	↓	↓	<10.	↓
1,2,3-Trichloropropane	↓	↓	↓	↓	↓	↓
Vinyl chloride	↓	↓	↓	↓	↓	↓
Xylene (total)	<3.	<3.	<3.	<3.	<30.	<3.

Comments:

Methodology: USEPA,SW-846, November 1986, 3rd Edition

Certification No.: 315

Units: µg/l

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

OBG LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-6-92

DESCRIPTION:	MW-12	MW-13	MW-14	Field Blank	QC Trip Blank
SAMPLE NO.:	P1974	P1975	P1976	P1977	P1978
Benzene	<1.	<1.	<1.	<1.	<1.
Benzyl chloride	<10.	<10.	<10.	<10.	<10.
Bis (2-chloroethoxy) methane	<5000.	<5000.	<5000.	<5000.	<5000.
Bromobenzene	<5.	<5.	<5.	<5.	<5.
Bromodichloromethane	<1.	<1.	<1.	<1.	<1.
Bromoform	<10.	<10.	<10.	<10.	<10.
Bromomethane	<10.	<10.	<10.	<10.	<10.
Carbon tetrachloride	<1.	<1.	<1.	<1.	<1.
Chlorobenzene	↓	↓	↓	↓	↓
Chloroethane	↓	↓	↓	↓	↓
2-Chloroethylvinyl ether	<10.	<10.	<10.	<10.	<10.
Chloroform	<1.	<1.	<1.	<1.	<1.
1-Chlorohexane	<10.	<10.	<10.	<10.	<10.
Chloromethane	<10.	<10.	<10.	<10.	<10.
Chloromethylmethyl ether	<100.	<100.	<100.	<100.	<100.
2-Chlorotoluene	<5.	<5.	<5.	<5.	<5.
4-Chlorotoluene	<5.	<5.	<5.	<5.	<5.
Dibromochloromethane	<1.	<1.	<1.	<1.	<1.
Dibromomethane	<10.	<10.	<10.	<10.	<10.
1,2-Dichlorobenzene	<5.	<5.	<5.	<5.	<5.
1,3-Dichlorobenzene	↓	↓	↓	↓	↓
1,4-Dichlorobenzene	↓	↓	↓	↓	↓
Dichlorodifluoromethane	<10.	<10.	<10.	<10.	<10.

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

OBG LABORATORIES, INC.

Volatile Organics
Method 8010/8020

CLIENT U.S. NAVY JOB NO. 3543.001.517

DESCRIPTION New River, N.C.

MATRIX: Water

DATE COLLECTED 1-29-92 DATE RECEIVED 1-31-92 DATE ANALYZED 2-6-92

DESCRIPTION:	MW-12	MW-13	MW-14	Field Blank	QC Trip Blank
SAMPLE NO.:	P1974	P1975	P1976	P1977	P1978
1,1-Dichloroethane	<1.	<1.	<1.	<1.	<1.
1,2-Dichloroethane	↓	↓	↓	↓	↓
1,1-Dichloroethylene	↓	↓	↓	↓	↓
1,2-Dichloroethylene (total)	↓	↓	↓	↓	↓
Dichloromethane	↓	↓	↓	↓	↓
1,2-Dichloropropane	↓	↓	↓	↓	↓
cis-1,3-Dichloropropylene	↓	↓	↓	↓	↓
trans-1,3-Dichloropropylene	↓	↓	↓	↓	↓
Ethylbenzene	↓	↓	↓	↓	↓
1,1,2,2-Tetrachloroethane	<10.	<10.	<10.	<10.	<10.
1,1,1,2-Tetrachloroethane	<1.	<1.	<1.	<1.	<1.
Tetrachloroethylene	4.	↓	↓	↓	↓
Toluene	1.	↓	↓	↓	↓
1,1,1-Trichloroethane	<1.	↓	↓	↓	↓
1,1,2-Trichloroethane	<1.	↓	↓	↓	↓
Trichloroethylene	1.	↓	↓	↓	↓
Trichlorofluoromethane	<1.	↓	↓	↓	↓
1,2,3-Trichloropropane	↓	↓	↓	↓	↓
Vinyl chloride	↓	↓	↓	↓	↓
Xylene (total)	<3.	<3.	<3.	<3.	<3.

Comments:

Methodology: USEPA,SW-846, November 1986, 3rd Edition

Certification No.: 315

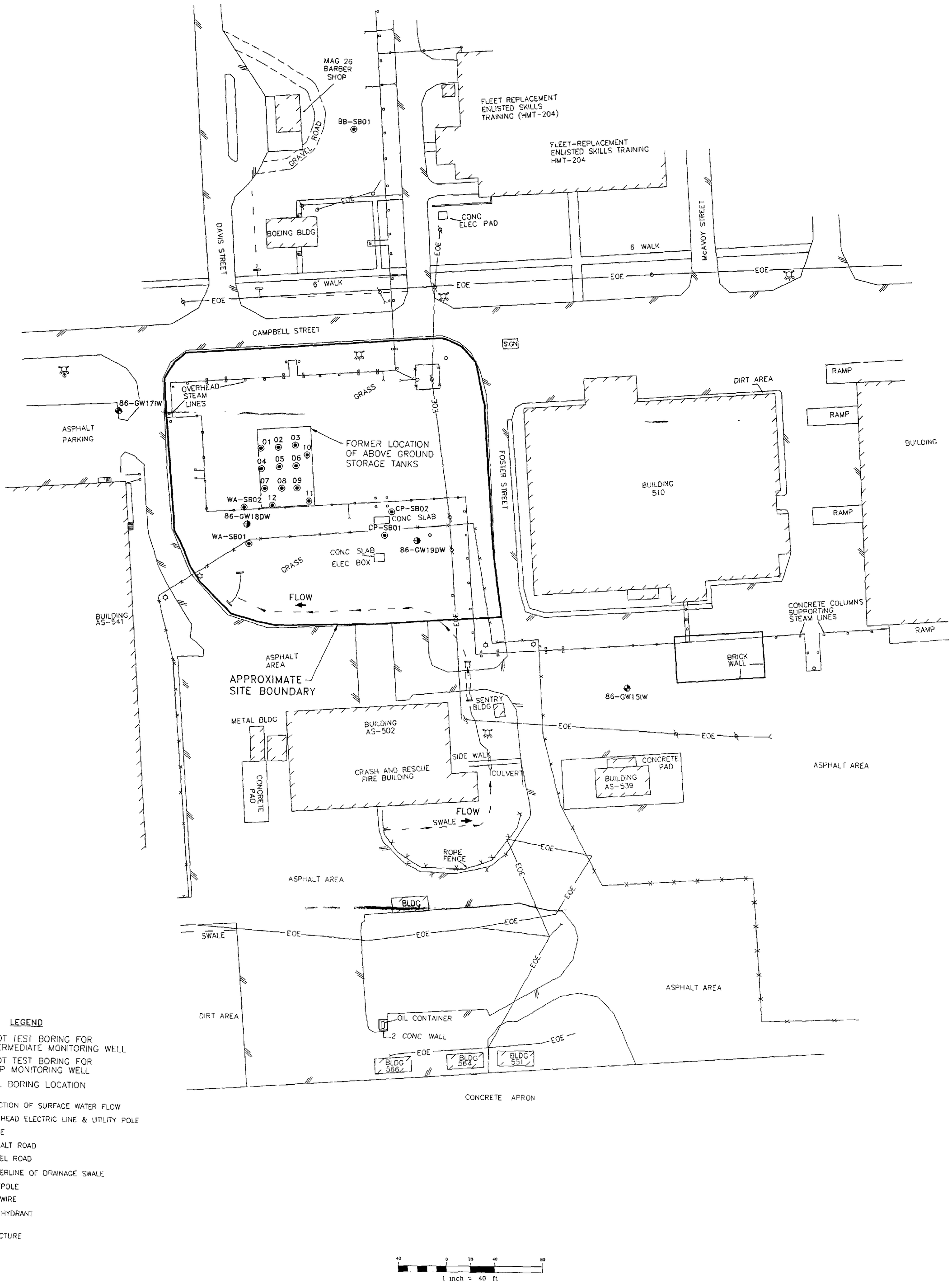
Units: µg/l

Authorized: Monika Santucci

Date: March 17, 1992

OBG Laboratories, Inc., *an O'Brien & Gere Limited Company*
5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

Remedial Investigation (Baker, 1996)



LEGEND

SOURCE LANTDIV FEBRUARY 1992
SURVEY BRENT A LANIER AND ASSOCIATES 1995

DRAWN	REL
REVIEWED	TFT
S O #	62470-303
CADD#	303048RI

NORTH

REMEDIAL INVESTIGATION CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc
Coraopolis, Pennsylvania

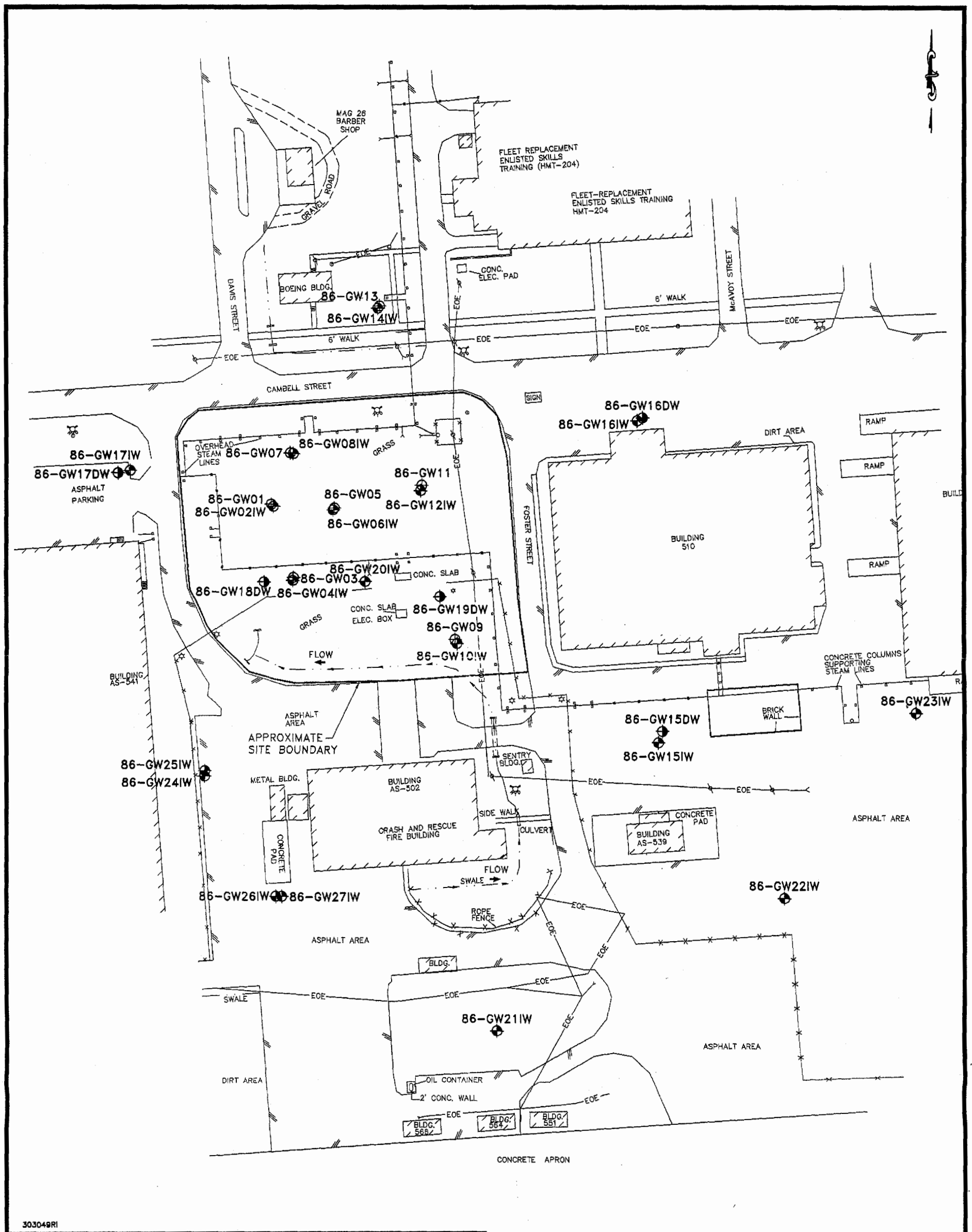
Baker
Baker Environmental, Inc.

SOIL SAMPLING LOCATIONS
SITE 86, ABOVE GROUND TANK STORAGE AREA

SCALE 1" = 40'
DATE JANUARY 1996

FIGRE No
3-1

01719W03X



303049RI

LEGEND

86-GW01	SHALLOW MONITORING WELL
86-GW04IW	INTERMEDIATE MONITORING WELL
86-GW18DW	DEEP MONITORING WELL
FLOW	DIRECTION OF SURFACE WATER FLOW
EOE	OVERHEAD ELECTRIC LINE & UTILITY POLE
	ASPHALT ROAD
	CENTERLINE OF DRAINAGE SWALE
	LIGHTPOLE
	STRUCTURE
	FENCE
	GUY WIRE
	FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

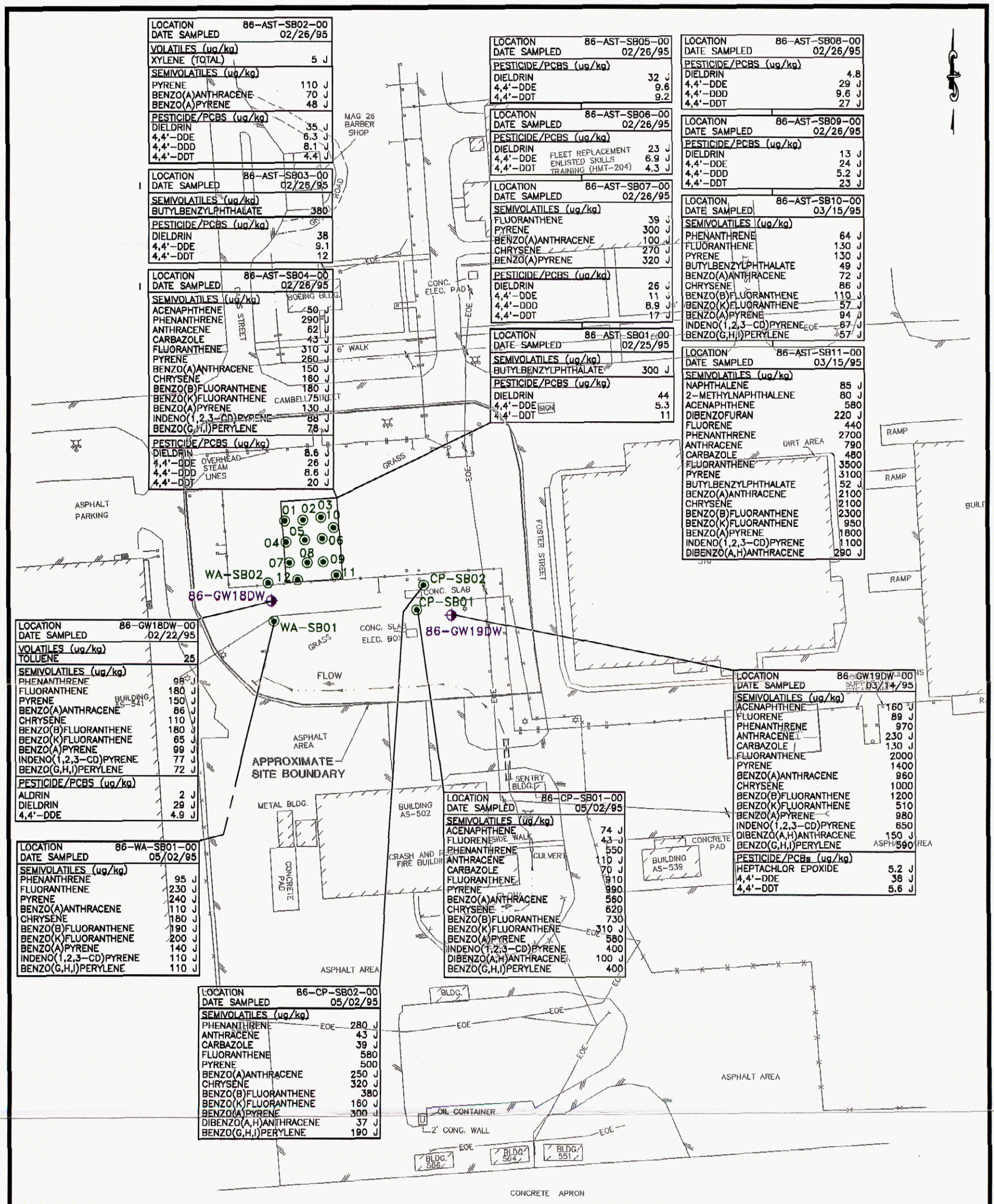
80 0 40 80
1 inch = 80 ft.

Baker
Baker Environmental, Inc.

3-2
MONITORING WELL LOCATIONS
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303

MARINE CORPS AIR STATION, NEW RIVER
CAMP LEJEUNE

01719W042



LOCATION	86-AST-SB02-00
DATE SAMPLED	02/26/95
VOLATILES (ug/kg)	
XYLENE (TOTAL)	5 J
SEMIVOLATILES (ug/kg)	
PYRENE	110 J
BENZO(A)ANTHRACENE	70 J
BENZO(A)PYRENE	48 J
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	35 J
4,4'-DDE	6.3 J
4,4'-DDD	8.1 J
4,4'-DDT	4.4 J

LOCATION	86-AST-SB03-00
DATE SAMPLED	02/26/95
SEMIVOLATILES (ug/kg)	
BUTYLBENZYLPHTHALATE	380
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	38
4,4'-DDE	9.1
4,4'-DDT	12

LOCATION	86-AST-SB04-00
DATE SAMPLED	02/26/95
SEMIVOLATILES (ug/kg)	
ACENAPHTHENE	50 J
PHENANTHRENE	290 J
ANTHRACENE	62 J
CARBAZOLE	43 J
FLUORANTHENE	310 J
PYRENE	260 J
BENZO(A)ANTHRACENE	150 J
CHRYSENE	160 J
BENZO(B)FLUORANTHENE	180 J
BENZO(K)FLUORANTHENE	75 J
BENZO(A)PYRENE	130 J
INDENO(1,2,3-CD)PYRENE	88 J
BENZO(G,H,I)PERYLENE	78 J
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	8.6 J
4,4'-DDE	26 J
4,4'-DDD	8.6 J
4,4'-DDT	20 J

LOCATION	86-AST-SB05-00
DATE SAMPLED	02/26/95
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	32 J
4,4'-DDE	9.6
4,4'-DDT	9.2

LOCATION	86-AST-SB06-00
DATE SAMPLED	02/26/95
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	23 J
4,4'-DDE	6.9 J
4,4'-DDT	4.3 J

FLEET REPLACEMENT ENLISTED SKILLS TRAINING (HMT-204)

LOCATION	86-AST-SB07-00
DATE SAMPLED	02/26/95
SEMIVOLATILES (ug/kg)	
FLUORANTHENE	39 J
PYRENE	300 J
BENZO(A)ANTHRACENE	100 J
CHRYSENE	270 J
BENZO(A)PYRENE	320 J
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	26 J
4,4'-DDE	11 J
4,4'-DDD	8.9 J
4,4'-DDT	17 J

LOCATION	86-AST-SB01-00
DATE SAMPLED	02/25/95
SEMIVOLATILES (ug/kg)	
BUTYLBENZYLPHTHALATE	300 J
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	44
4,4'-DDE	5.3
4,4'-DDT	11

LOCATION	86-AST-SB08-00
DATE SAMPLED	02/26/95
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	4.8
4,4'-DDE	29 J
4,4'-DDD	9.6 J
4,4'-DDT	27 J

LOCATION	86-AST-SB09-00
DATE SAMPLED	02/26/95
PESTICIDE/PCBS (ug/kg)	
DIELDRIN	13 J
4,4'-DDE	24 J
4,4'-DDD	5.2 J
4,4'-DDT	23 J

LOCATION	86-AST-SB10-00
DATE SAMPLED	03/15/95
SEMIVOLATILES (ug/kg)	
PHENANTHRENE	64 J
FLUORANTHENE	130 J
PYRENE	130 J
BUTYLBENZYLPHTHALATE	49 J
BENZO(A)ANTHRACENE	72 J
CHRYSENE	86 J
BENZO(B)FLUORANTHENE	110 J
BENZO(K)FLUORANTHENE	57 J
BENZO(A)PYRENE	94 J
INDENO(1,2,3-CD)PYRENE	67 J
BENZO(G,H,I)PERYLENE	57 J

LOCATION	86-AST-SB11-00
DATE SAMPLED	03/15/95
SEMIVOLATILES (ug/kg)	
NAPHTHALENE	85 J
2-METHYLNAPHTHALENE	80 J
ACENAPHTHENE	580
DIBENZOFURAN	220 J
FLUORENE	440
PHENANTHRENE	2700
ANTHRACENE	790
CARBAZOLE	480
FLUORANTHENE	3500
PYRENE	3100
BUTYLBENZYLPHTHALATE	52 J
BENZO(A)ANTHRACENE	2100
CHRYSENE	2100
BENZO(B)FLUORANTHENE	2300
BENZO(K)FLUORANTHENE	950
BENZO(A)PYRENE	1800
INDENO(1,2,3-CD)PYRENE	1100
DIBENZO(A,H)ANTHRACENE	290 J

LOCATION	86-GW18DW-00
DATE SAMPLED	02/22/95
VOLATILES (ug/kg)	
TOLUENE	25
SEMIVOLATILES (ug/kg)	
PHENANTHRENE	98 J
FLUORANTHENE	180 J
PYRENE	150 J
BENZO(A)ANTHRACENE	86 J
CHRYSENE	110 J
BENZO(B)FLUORANTHENE	180 J
BENZO(K)FLUORANTHENE	65 J
BENZO(A)PYRENE	99 J
INDENO(1,2,3-CD)PYRENE	77 J
BENZO(G,H,I)PERYLENE	72 J
PESTICIDE/PCBS (ug/kg)	
ALDRIN	2 J
DIELDRIN	29 J
4,4'-DDE	4.9 J

LOCATION	86-WA-SB01-00
DATE SAMPLED	05/02/95
SEMIVOLATILES (ug/kg)	
PHENANTHRENE	95 J
FLUORANTHENE	230 J
PYRENE	240 J
BENZO(A)ANTHRACENE	110 J
CHRYSENE	180 J
BENZO(B)FLUORANTHENE	190 J
BENZO(K)FLUORANTHENE	200 J
BENZO(A)PYRENE	140 J
INDENO(1,2,3-CD)PYRENE	110 J
BENZO(G,H,I)PERYLENE	110 J

LOCATION	86-CP-SB01-00
DATE SAMPLED	05/02/95
SEMIVOLATILES (ug/kg)	
ACENAPHTHENE	74 J
FLUORENE	43 J
PHENANTHRENE	550
ANTHRACENE	110 J
CARBAZOLE	70 J
FLUORANTHENE	910
PYRENE	990
BENZO(A)ANTHRACENE	560
CHRYSENE	620
BENZO(B)FLUORANTHENE	730
BENZO(K)FLUORANTHENE	310 J
BENZO(A)PYRENE	580
INDENO(1,2,3-CD)PYRENE	400
DIBENZO(A,H)ANTHRACENE	100 J
BENZO(G,H,I)PERYLENE	400

LOCATION	86-CP-SB02-00
DATE SAMPLED	05/02/95
SEMIVOLATILES (ug/kg)	
PHENANTHRENE	280 J
ANTHRACENE	43 J
CARBAZOLE	39 J
FLUORANTHENE	580
PYRENE	500
BENZO(A)ANTHRACENE	250 J
CHRYSENE	320 J
BENZO(B)FLUORANTHENE	380
BENZO(K)FLUORANTHENE	160 J
BENZO(A)PYRENE	300 J
DIBENZO(A,H)ANTHRACENE	37 J
BENZO(G,H,I)PERYLENE	190 J

LOCATION	86-GW19DW-00
DATE SAMPLED	03/14/95
SEMIVOLATILES (ug/kg)	
ACENAPHTHENE	160 J
FLUORENE	89 J
PHENANTHRENE	970
ANTHRACENE	230 J
CARBAZOLE	130 J
FLUORANTHENE	2000
PYRENE	1400
BENZO(A)ANTHRACENE	960
CHRYSENE	1000
BENZO(B)FLUORANTHENE	1200
BENZO(K)FLUORANTHENE	510
BENZO(A)PYRENE	980
INDENO(1,2,3-CD)PYRENE	650
DIBENZO(A,H)ANTHRACENE	150 J
BENZO(G,H,I)PERYLENE	590
PESTICIDE/PCBs (ug/kg)	
HEPTACHLOR EPOXIDE	5.2 J
4,4'-DDE	38 J
4,4'-DDT	5.6 J

303087RI

LEGEND

- 86-GW18DW — PILOT TEST BORING FOR DEEP MONITORING WELL
- SB09 — SOIL BORING LOCATION
- FLOW — DIRECTION OF SURFACE WATER FLOW
- EOE — OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- GRAVEL ROAD
- CENTERLINE OF DRAINAGE SWALE
- FENCE
- LIGHTPOLE
- GUY WIRE
- STRUCTURE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

NOTE: LOCATIONS SHOWN WITHOUT CONCENTRATIONS INDICATE NONDETECTABLE LEVELS.

80 0 40 80

1 inch = 80 ft.

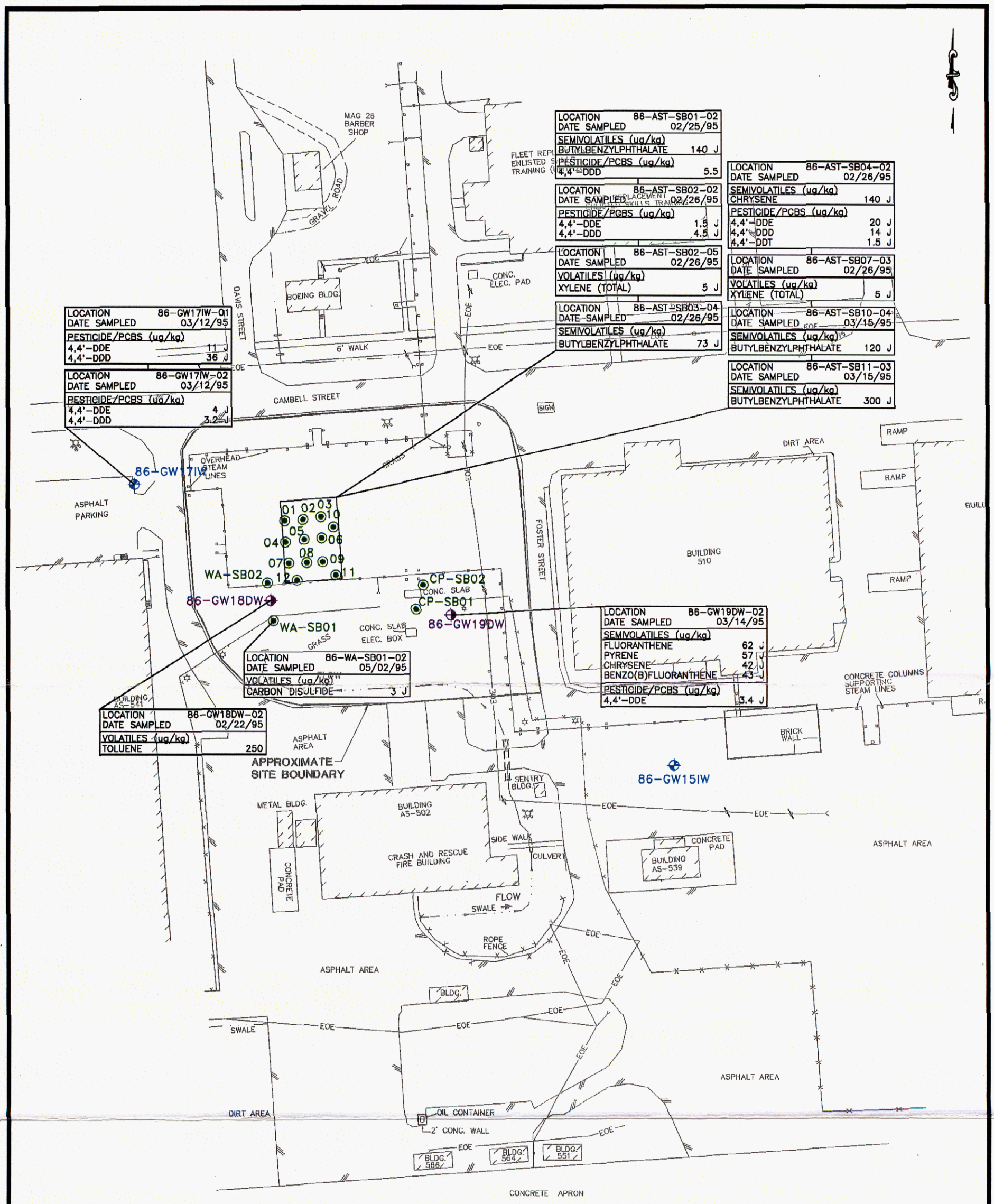
Baker

Baker Environmental, Inc.

FIGURE 4-1
ORGANIC COMPOUNDS IN SURFACE SOIL
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303

MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

01719WB5Y



303086RI

LEGEND

- 86-GW04IW — PILOT TEST BORING FOR INTERMEDIATE MONITORING WELL
- 86-GW18DW — PILOT TEST BORING FOR DEEP MONITORING WELL
- SB09 — SOIL BORING LOCATION
- FLOW — DIRECTION OF SURFACE WATER FLOW
- EOE — OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- GRAVEL ROAD
- CENTERLINE OF DRAINAGE SWALE
- FENCE
- LIGHTPOLE
- GUY WIRE
- STRUCTURE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

NOTE: LOCATIONS SHOWN WITHOUT CONCENTRATIONS INDICATE NONDETECTABLE LEVELS.

80 0 40 80

1 inch = 80 ft.

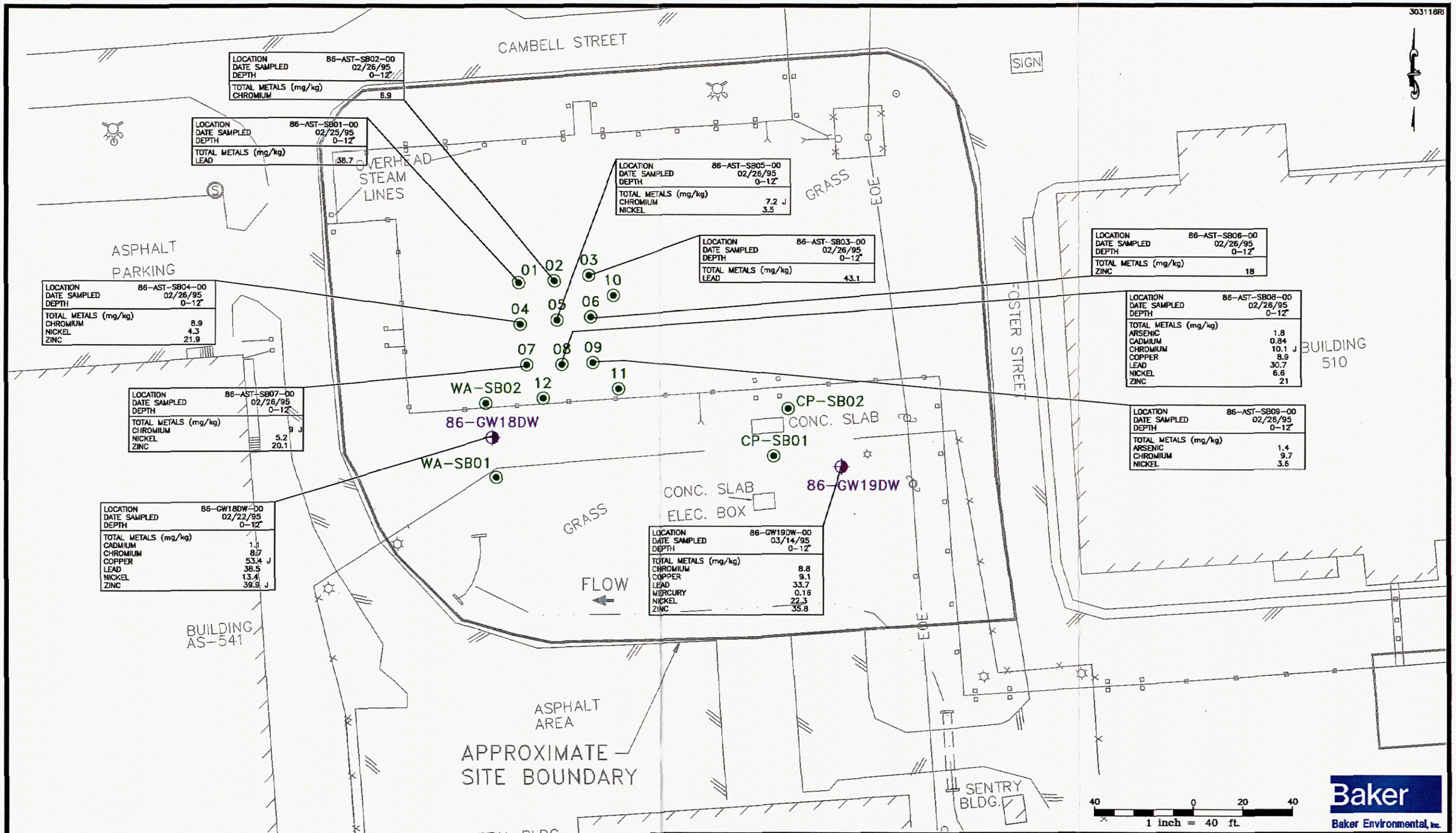
Baker

Baker Environmental, Inc.

FIGURE 4-2
ORGANIC COMPOUNDS IN SUBSURFACE SOIL
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303

MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

303116RI

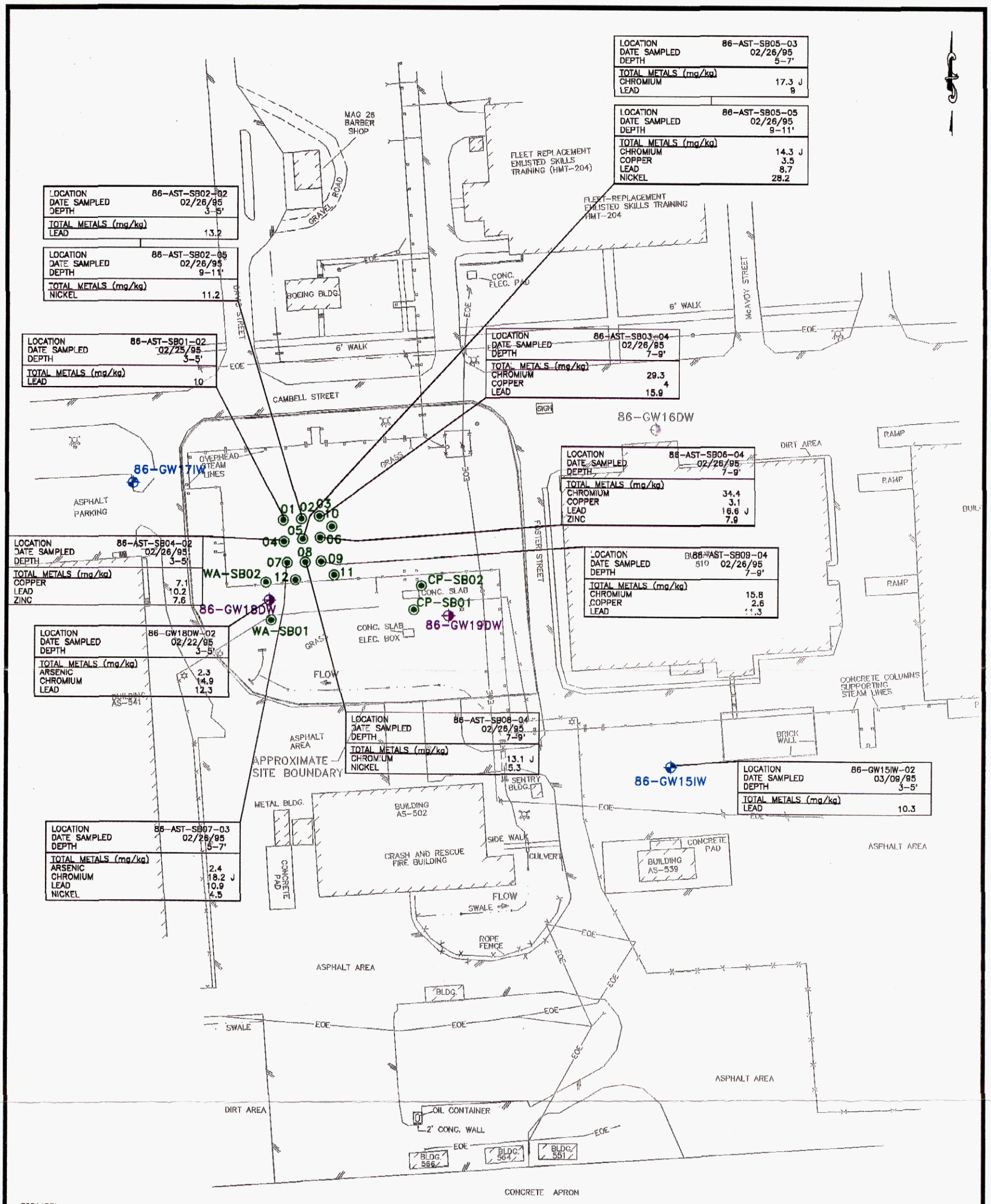


LEGEND

86-GW15DW — PILOT TEST BORING FOR DEEP MONITORING WELL

CP-SB01 — SOIL BORING LOCATION

FIGURE 4-3
SELECTED TAL METALS IN SURFACE SOIL
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA



LEGEND

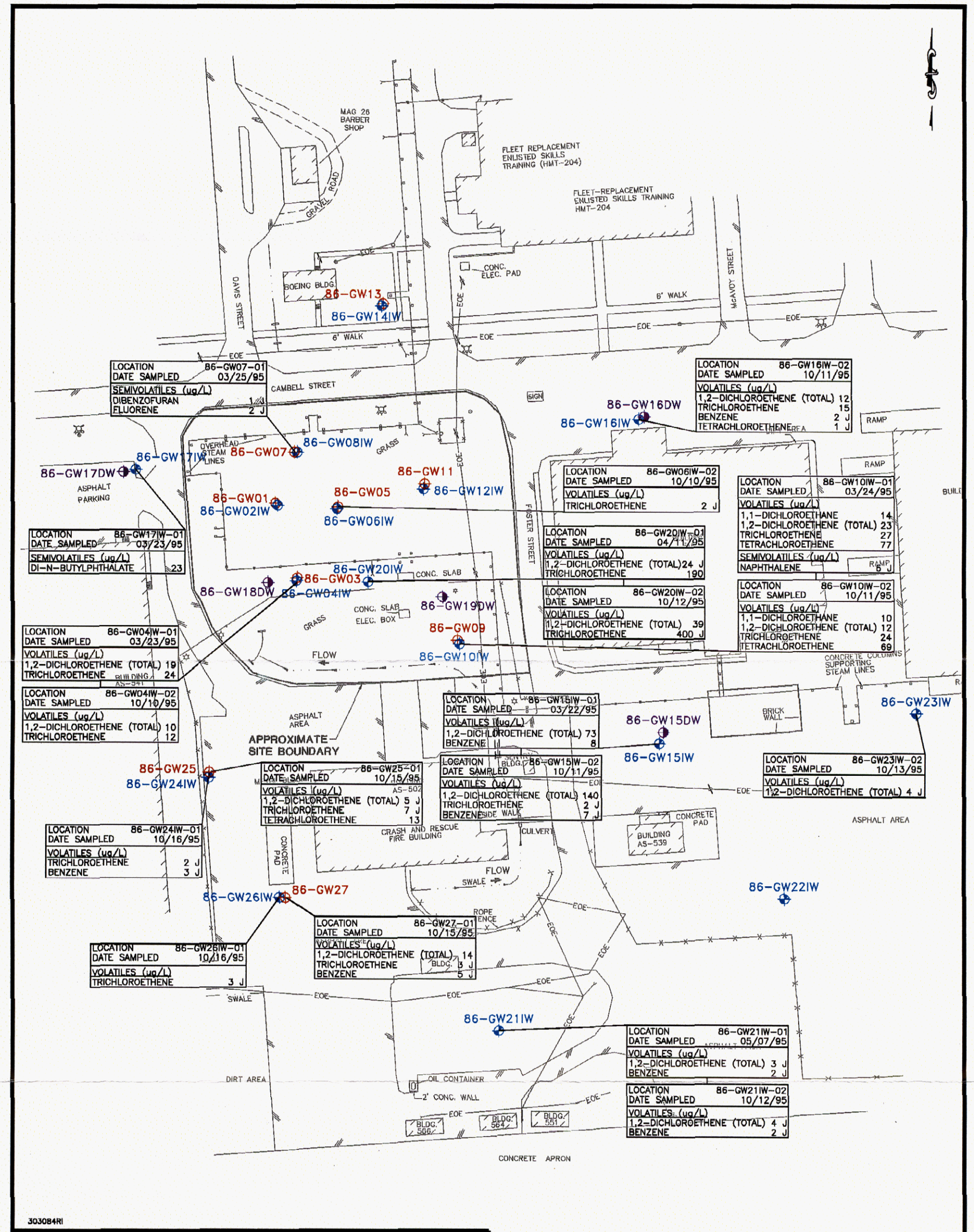
- 86-GW15IW — PILOT TEST BORING FOR INTERMEDIATE MONITORING WELL
- 86-GW18DW — PILOT TEST BORING FOR DEEP MONITORING WELL
- SB09 — SOIL BORING LOCATION
- FLOW — DIRECTION OF SURFACE WATER FLOW
- EOE — OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- GRAVEL ROAD
- CENTERLINE OF DRAINAGE SWALE
- FENCE
- LIGHTPOLE
- GUY WIRE
- STRUCTURE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

80 0 40 80
1 inch = 80 ft.

Baker
Baker Environmental, Inc.

FIGURE 4-4
SELECTED TAL METALS IN SUBSURFACE SOIL
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA



303084RI

LEGEND

- 86-GW01 — SHALLOW MONITORING WELL
- 86-GW04IW — INTERMEDIATE MONITORING WELL
- 86-GW18DW — DEEP MONITORING WELL
- FLOW — DIRECTION OF SURFACE WATER FLOW
- EOE — OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- GRAVEL ROAD
- CENTERLINE OF DRAINAGE SWALE
- FENCE
- LIGHTPOLE
- GUY WIRE
- STRUCTURE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

NOTE: LOCATIONS SHOWN WITHOUT CONCENTRATIONS INDICATE NONDETECTABLE LEVELS.

80 0 40 80

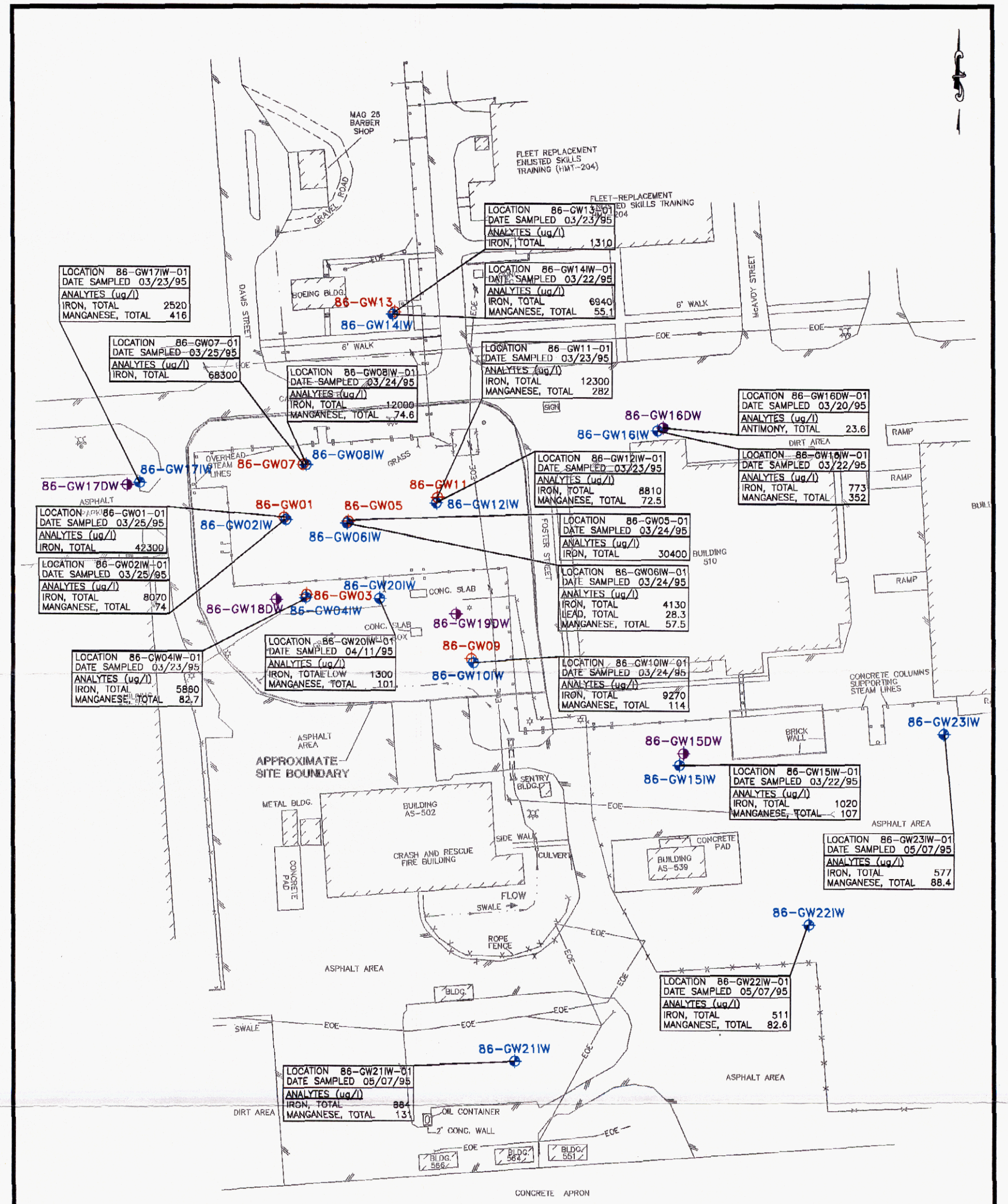
1 inch = 80 ft.

Baker

Baker Environmental, Inc.

FIGURE 4-5
ORGANIC COMPOUNDS IN GROUNDWATER
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303

MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA



303085RI

LEGEND

- 86-GW01 — SHALLOW MONITORING WELL
- 86-GW04IW — INTERMEDIATE MONITORING WELL
- 86-GW18DW — DEEP MONITORING WELL
- FLOW — DIRECTION OF SURFACE WATER FLOW
- EOE — OVERHEAD ELECTRIC LINE & UTILITY POLE
- ASPHALT ROAD
- GRAVEL ROAD
- CENTERLINE OF DRAINAGE SWALE
- FENCE
- LIGHTPOLE
- GUY WIRE
- STRUCTURE
- FIRE HYDRANT

SOURCE: LANTDIV, OCT. 1991

80 0 40 80

1 inch = 80 ft.

Baker

Baker Environmental, Inc.

FIGURE 4-6
TAL METALS IN GROUNDWATER
ABOVE SCREENING STANDARDS
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

TABLE 4-2

SUMMARY OF SITE CONTAMINATION
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA

Media	Fraction	Detected Contaminants	Comparison Criteria		Site Contamination				
			Standard	Base Background	Min.	Max.	Max. Location	Detection Frequency	Distribution
Surface Soil	Volatiles	Toluene	NA	NA	25	25	86-GW18DW	1/18	former tank area
		Xylene (total)	NA	NA	5	5	AST-SB02	1/18	former tank area
	Semivolatiles	Naphthalene (PAH)	NA	NA	85	85	AST-SB11	1/18	former tank area
		2-Methylnapthalene	NA	NA	80	80	AST-SB11	1/18	former tank area
		Acenaphthene (PAH)	NA	NA	50	580	AST-SB11	4/18	scattered
		Dibenzofuran	NA	NA	220	220	AST-SB11	1/18	former tank area
		Fluorene (PAH)	NA	NA	43	440	AST-SB11	3/18	scattered
		Phenanthrene (PAH)	NA	NA	64	2,700	AST-SB11	8/18	scattered
		Anthracene (PAH)	NA	NA	43	790	AST-SB11	5/18	scattered
		Carbazole	NA	NA	39	480	AST-SB11	5/18	scattered
		Fluoranthene (PAH)	NA	NA	39	3,500	AST-SB11	9/18	scattered
		Pyrene (PAH)	NA	NA	110	3,100	AST-SB11	10/18	scattered
		Butyl benzyl phthalate	NA	NA	49	380	AST-SB03	4/18	former tank area
		B(a)anthracene (PAH)	NA	NA	70	2,100	AST-SB11	10/18	scattered
		Chrysene (PAH)	NA	NA	86	2,100	AST-SB11	9/18	scattered
		B(b)fluoranthene (PAH)	NA	NA	110	2,300	AST-SB11	8/18	scattered
		B(k)fluoranthene (PAH)	NA	NA	57	950	AST-SB11	8/18	scattered
		Benzo(a)pyrene (PAH)	NA	NA	48	1,800	AST-SB11	10/18	scattered
		I(1,2,3-cd)pyrene (PAH)	NA	NA	67	1,100	AST-SB11	7/18	scattered
		D(a,h)anthracene (PAH)	NA	NA	37	290	AST-SB11	4/18	former tank area
		B(g,h,i)perylene (PAH)	NA	NA	57	590	86-GW19DW	7/18	scattered

TABLE 4-2 (Continued)

SUMMARY OF SITE CONTAMINATION
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA

Media	Fraction	Detected Contaminants	Comparison Criteria		Site Contamination				
			Standard	Base Background	Min.	Max.	Max. Location	Detection Frequency	Distribution
Surface Soil (Continued)	Pesticides	Aldrin	NA	NA	2	2	86-GW18DW	1/11	former tank area
		Heptachlor epoxide	NA	NA	5.2	5.2	86-GW19DW	1/11	southeast
		Dieldrin	NA	NA	4.8	44	AST-SB01	10/11	widely scattered, prevalent
		4-4'-DDE	NA	NA	4.9	38	86-GW19DW	11/11	widely scattered, prevalent
		4-4'-DDD	NA	NA	5.2	9.6	AST-SB08	5/11	scattered
		4-4'-DDT	NA	NA	4.3	27	AST-SB08	10/11	widely scattered, prevalent
	PCBs	ND	NA	NA				0/11	
	Metals (1)	Arsenic	NA	1.3	0.5	1.8	AST-SB08	9/11	2 exceed BB, former tank area
		Cadmium	NA	0.7	0.5	1.1	86-GW18DW	5/11	2 exceed BB, former tank area
		Chromium	NA	6.7	5.1	10.1	AST-SB08	11/11	8 exceed BB, former tank area
		Copper	NA	7.2	1.1	53.4	86-GW18DW	10/11	3 exceed BB, former tank area
		Lead	NA	23.7	12.4	43.1	AST-SB03	11/11	5 exceed BB, former tank area
		Mercury	NA	0.1	0.2	0.2	86-GW19DW	1/11	1 exceeds BB, southeast
		Nickel	NA	3.4	1.3	22.3	86-GW19DW	8/11	7 exceed BB, former tank area
		Zinc	NA	13.9	5.4	39.9	86-GW18DW	11/11	6 exceed BB, former tank area
Subsurface Soil	Volatiles	Carbon Disulfide	NA	NA	3	3	WA-SB01	1/23	south of former tank area
		Toluene	NA	NA	250	250	86-GW18DW	1/23	former tank area
		Xylene (total)	NA	NA	5	5	AST-SB07	2/23	former tank area
	Semivolatiles	Fluoranthene (PAH)	NA	NA	62	62	86-GW19DW	1/23	southeast
		Pyrene (PAH)	NA	NA	57	57	86-GW19DW	1/23	southeast
		Butylbenzylphtalate	NA	NA	73	300	AST-SB11	4/23	former tank area
		Chrysene (PAH)	NA	NA	42	140	AST-SB04	2/23	former tank area
		B(b)fluoranthene (PAH)	NA	NA	43	43	86-GW19DW	1/23	southeast

TABLE 4-2 (Continued)

SUMMARY OF SITE CONTAMINATION
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA

Media	Fraction	Detected Contaminants	Comparison Criteria		Site Contamination				
			Standard	Base Background	Min.	Max.	Max. Location	Detection Frequency	Distribution
Subsurface Soil (Continued)	Pesticides	4,4'-DDE	NA	NA	1.5	20	AST-SB04	5/16	scattered
		4,4'-DDD	NA	NA	3.2	36	86-GW17IW	5/16	scattered
		4,4'-DDT	NA	NA	1.5	1.5	AST-SB04	1/16	former tank area
	PCBs	ND	NA	NA				0/16	
	Metals (1)	Antimony	NA	6.4	2.2	2.2	86-GW17IW	1/12	does not exceed BB
		Arsenic	NA	1.9	0.3	2.4	AST-SB07	13/16	2 exceed BB, former tank area
		Chromium	NA	12.6	2.4	34.4	AST-SB06	16/16	9 exceed BB, scattered
		Copper	NA	2.4	0.6	7.1	AST-SB04	14/16	5 exceed BB, former tank area
		Lead	NA	8.3	3	16.6	AST-SB06	16/16	12 exceed BB, scattered
		Nickel	NA	3.7	1	28.2	AST-SB05	12/16	4 exceed BB, former tank area
		Zinc	NA	6.7	1.3	7.9	AST-SB06	15/16	2 exceed BB, former tank area
Groundwater	Volatiles	1,1-Dichloroethane	NCWQS - 700	NA	10	14	86-GW10IW	2/41	do not exceed standard
		1,2-Dichloroethene (total)	MCL - 70	NA	3	140	86-GW15IW	14/41	2 exceed standard, southeast
		Trichloroethene	NCWQS - 2.8	NA	2	400	86-GW20IW	13/41	12 exceed standard, south and central
		Benzene	NCWQS -1	NA	2	8	86-GW15IW	7/41	7 exceed standard, south and central
		Tetrachloroethene	NCWQS - 0.7	NA	1	77	86-GW10IW	4/41	4 exceed standard, south and central
	Semivolatiles	Naphthalene (PAH)	NCWQS - 21	NA	6	6	86-GW10IW	1/23	does not exceed standard, southeast
		Dibenzofuran	NA	NA	1	1	86-GW07	1/23	north of former tank area
		Fluorene (PAH)	NCWQS - 280	NA	2	2	86-GW07	1/23	does not exceed standard, north
		Di-n-butylphthalate	NCWQS - 700	NA	23	23	86-GW17IW	1/23	does not exceed standard, west
	Pesticides	ND	NA	NA				0/5	
	PCBs	ND	NA	NA				0/5	

TABLE 4-2 (Continued)

SUMMARY OF SITE CONTAMINATION
SITE 86, ABOVE GROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA

Media	Fraction	Detected Contaminants	Comparison Criteria		Site Contamination				
			Standard	Base Background	Min.	Max.	Max. Location	Detection Frequency	Distribution
Groundwater (Continued)	Total Metals	Antimony	MCL - 6	NA	23.6	23.6	86-GW16DW	1/26	1 exceeds standard, east
		Iron	NCWQS - 300	NA	5.1	68,300	86-GW07	23/26	19 exceed standard, scattered
		Lead	NCWQS - 15	NA	28.3	28.3	86-GW06IW	1/26	1 exceeds standard, tank area
		Manganese	NCWQS - 50	NA	3.8	416	86-GW17IW	22/26	15 exceed standard, scattered

Notes:

- Concentrations are presented in µg/L for liquid and µg/Kg for solids (ppb), metal concentrations for soils and sediments are presented in mg/Kg (ppm).

(1) Metals in both surface and subsurface soils were compared to twice the average base background positive concentrations for priority pollutant metals only (i.e., antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc).

ARAR - Applicable or Relevant and Appropriate Requirements
BB - Base background, value equals two times average value for soil (refer to Appendix O)
NA - Not applicable
NCWQS - North Carolina Water Quality Standard
ND - Not detected
NOAA - National Oceanic and Atmospheric Administration
MCL - Federal Maximum Contaminant Level
PAH - Polynuclear aromatic hydrocarbon

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB01-00	86-AST-SB02-00	86-AST-SB03-00	86-AST-SB04-00	86-AST-SB05-00	86-AST-SB06-00
DATE SAMPLED	02/25/95	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
VOLATILES (ug/kg)						
ACETONE	29 UJ	11 UJ	35 UJ	12 U	11 U	28 J
TOLUENE	12 U	11 UJ	11 U	12 U	11 U	11 U
XYLENE (TOTAL)	12 U	5 J	11 U	12 U	11 U	11 U
SEMIVOLATILES (ug/kg)						
NAPHTHALENE	370 U	370 U	370 U	390 U	380 U	360 U
2-METHYLNAPHTHALENE	370 U	370 U	370 U	390 U	380 U	360 U
ACENAPHTHENE	370 U	370 U	370 U	50 J	380 U	360 U
DIBENZOFURAN	370 U	370 U	370 U	390 U	380 U	360 U
FLUORENE	370 U	370 U	370 U	390 U	380 U	360 U
PHENANTHRENE	370 U	370 UJ	370 U	290 J	380 U	360 U
ANTHRACENE	370 U	370 UJ	370 U	62 J	380 U	360 U
CARBAZOLE	370 U	370 UJ	370 U	43 J	380 U	360 U
FLUORANTHENE	370 U	370 UJ	370 U	310 J	380 U	360 U
PYRENE	370 U	110 J	370 U	260 J	380 U	360 U
BUTYLBENZYLPHTHALATE	300 J	370 UJ	380	390 U	380 U	360 U
BENZO(A)ANTHRACENE	370 U	70 J	370 U	150 J	380 U	360 U
CHRYSENE	370 U	370 UJ	370 U	160 J	380 U	360 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	370 UJ	370 U	390 U	380 U	360 U
BENZO(B)FLUORANTHENE	370 U	370 UJ	370 U	180 J	380 U	360 U
BENZO(K)FLUORANTHENE	370 U	370 UJ	370 U	75 J	380 U	360 U
BENZO(A)PYRENE	370 U	48 J	370 U	130 J	380 U	360 U
INDENO(1,2,3-CD)PYRENE	370 U	370 UJ	370 U	88 J	380 U	360 U
DIBENZO(A,H)ANTHRACENE	370 U	370 UJ	370 U	390 U	380 U	360 U
BENZO(G,H,I)PERYLENE	370 U	370 UJ	370 U	78 J	380 U	360 U

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB01-00	86-AST-SB02-00	86-AST-SB03-00	86-AST-SB04-00	86-AST-SB05-00	86-AST-SB06-00
DATE SAMPLED	02/25/95	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
PESTICIDE/PCBS (ug/kg)						
ALDRIN	1.9 U	1.8 UJ	1.8 U	2 UJ	1.8 U	1.8 UJ
HEPTACHLOR EPOXIDE	1.9 U	1.8 UJ	1.8 U	2 UJ	1.8 U	1.8 UJ
DIELDRIN	44	35 J	38	8.6 J	32 J	23 J
4,4'-DDE	5.3	6.3 J	9.1	26 J	9.6	6.9 J
4,4'-DDD	3.8 U	8.1 J	3.7 U	8.6 J	3.7 U	3.6 UJ
4,4'-DDT	11	4.4 J	12	20 J	9.2	4.3 J

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB07-00	86-AST-SB08-00	86-AST-SB09-00	86-AST-SB10-00	86-AST-SB11-00	86-AST-SB12-00
DATE SAMPLED	02/26/95	02/26/95	02/26/95	03/15/95	03/15/95	03/15/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
VOLATILES (ug/kg)						
ACETONE	11 U	11 U	11 U	11 UJ	13 UJ	29 UJ
TOLUENE	11 U	11 U	11 U	11 U	13 U	12 U
XYLENE (TOTAL)	11 U	11 U	11 U	11 U	13 U	12 U
SEMIVOLATILES (ug/kg)						
NAPHTHALENE	370 U	370 U	360 U	370 U	85 J	380 U
2-METHYLNAPHTHALENE	370 U	370 U	360 U	370 U	80 J	380 U
ACENAPHTHENE	370 U	370 U	360 U	370 U	580	380 U
DIBENZOFURAN	370 U	370 U	360 U	370 U	220 J	380 U
FLUORENE	370 U	370 U	360 U	370 U	440	380 U
PHENANTHRENE	370 U	370 U	360 U	64 J	2700	380 U
ANTHRACENE	370 U	370 U	360 U	370 U	790	380 U
CARBAZOLE	370 U	370 U	360 U	370 U	480	380 U
FLUORANTHENE	39 J	370 U	360 U	130 J	3500	380 U
PYRENE	300 J	370 U	360 U	130 J	3100	380 U
BUTYLBENZYLPHTHALATE	370 U	370 U	360 U	49 J	52 J	380 U
BENZO(A)ANTHRACENE	100 J	370 U	360 U	72 J	2100	380 U
CHRYSENE	270 J	370 U	360 U	86 J	2100	380 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	370 U	360 U	370 U	47 J	380 U
BENZO(B)FLUORANTHENE	370 U	370 U	360 U	110 J	2300	380 U
BENZO(K)FLUORANTHENE	370 U	370 U	360 U	57 J	950	380 U
BENZO(A)PYRENE	320 J	370 U	360 U	94 J	1800	380 U
INDENO(1,2,3-CD)PYRENE	370 U	370 U	360 U	67 J	1100	380 U
DIBENZO(A,H)ANTHRACENE	370 U	370 U	360 U	370 U	290 J	380 U
BENZO(G,H,I)PERYLENE	370 U	370 U	360 U	57 J	440 U	380 U

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB07-00	86-AST-SB08-00	86-AST-SB09-00	86-AST-SB10-00	86-AST-SB11-00	86-AST-SB12-00
DATE SAMPLED	02/26/95	02/26/95	02/26/95	03/15/95	03/15/95	03/15/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
PESTICIDE/PCBS (ug/kg)						
ALDRIN	1.9 UJ	1.8 U	1.9 UJ	NA	NA	NA
HEPTACHLOR EPOXIDE	1.9 UJ	1.8 U	1.9 UJ	NA	NA	NA
DIELDRIN	26 J	4.8	13 J	NA	NA	NA
4,4'-DDE	11 J	29 J	24 J	NA	NA	NA
4,4'-DDD	8.9 J	9.6 J	5.2 J	NA	NA	NA
4,4'-DDT	17 J	27 J	23 J	NA	NA	NA

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-CP-SB01-00	86-CP-SB02-00	86-GW18DW-00	86-GW19DW-00	86-WA-SB01-00	86-WA-SB02-00
DATE SAMPLED	05/02/95	05/02/95	02/22/95	03/14/95	05/02/95	05/02/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
VOLATILES (ug/kg)						
ACETONE	12 U	11 U	15 U	12 U	15 UJ	11 U
TOLUENE	12 U	11 U	25	12 UJ	11 UJ	11 UJ
XYLENE (TOTAL)	12 U	11 U	15 U	12 UJ	11 UJ	11 UJ
SEMIVOLATILES (ug/kg)						
NAPHTHALENE	350 U	350 U	490 U	400 U	350 U	350 U
2-METHYLNAPHTHALENE	350 U	350 U	490 U	400 U	350 U	350 U
ACENAPHTHENE	74 J	350 U	490 U	160 J	350 U	350 U
DIBENZOFURAN	350 U	350 U	490 U	400 U	350 U	350 U
FLUORENE	43 J	350 U	490 U	89 J	350 U	350 U
PHENANTHRENE	550	280 J	98 J	970	95 J	350 U
ANTHRACENE	110 J	43 J	490 U	230 J	350 U	350 U
CARBAZOLE	70 J	39 J	490 U	130 J	350 U	350 U
FLUORANTHENE	910	580	180 J	2000	230 J	350 U
PYRENE	990	500	150 J	1400	240 J	350 U
BUTYLBENZYLPHTHALATE	350 U	350 U	490 U	400 U	350 U	350 U
BENZO(A)ANTHRACENE	560	250 J	86 J	960	110 J	350 U
CHRYSENE	620	320 J	110 J	1000	180 J	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	350 U	350 U	86 J	400 U	350 U	350 U
BENZO(B)FLUORANTHENE	730	380	180 J	1200	190 J	350 U
BENZO(K)FLUORANTHENE	310 J	160 J	65 J	510	200 J	350 U
BENZO(A)PYRENE	580	300 J	99 J	980	140 J	350 U
INDENO(1,2,3-CD)PYRENE	400	350 U	77 J	650	110 J	350 U
DIBENZO(A,H)ANTHRACENE	100 J	37 J	490 UJ	150 J	350 U	350 U
BENZO(G,H,I)PERYLENE	400	190 J	72 J	590	110 J	350 U

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-3
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-CP-SB01-00	86-CP-SB02-00	86-GW18DW-00	86-GW19DW-00	86-WA-SB01-00	86-WA-SB02-00
DATE SAMPLED	05/02/95	05/02/95	02/22/95	03/14/95	05/02/95	05/02/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
PESTICIDE/PCBS (ug/kg)						
ALDRIN	NA	NA	2 J	2 UJ	NA	NA
HEPTACHLOR EPOXIDE	NA	NA	2.4 UJ	5.2 J	NA	NA
DIELDRIN	NA	NA	29 J	4 UJ	NA	NA
4,4'-DDE	NA	NA	4.9 J	38 J	NA	NA
4,4'-DDD	NA	NA	4.9 UJ	4 UJ	NA	NA
4,4'-DDT	NA	NA	4.9 UJ	5.6 J	NA	NA

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-4
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TAL METALS

LOCATION	86-AST-SB01-00	86-AST-SB02-00	86-AST-SB03-00	86-AST-SB04-00	86-AST-SB05-00	86-AST-SB06-00
DATE SAMPLED	02/25/95	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"	0-12"
ANALYTES (mg/kg)						
ALUMINUM, TOTAL	4590	4790	5750	5730	6340	4830
ARSENIC, TOTAL	0.69	0.38 U	0.4 U	1.2	0.54	0.53
BARIUM, TOTAL	9.3	9.4	8.5	133	9.5	7.7
CADMIUM, TOTAL	0.54 U	0.62 U	0.57 U	0.53 U	0.63 U	0.57
CALCIUM, TOTAL	19900	1380	1640	8400	2780 J	2800
CHROMIUM, TOTAL	5.6	6.9	6.2	8.9	7.2 J	5.1
COBALT, TOTAL	0.58 U	0.49 U	0.61 U	0.42 U	0.67 U	0.45 U
COPPER, TOTAL	1.8	0.85 U	1.1	3.1	1.5	1.4
IRON, TOTAL	2070	1670	1720	3980	2010	1800
LEAD, TOTAL	38.7	18.7	43.1	14.7 J	14.4	15.9 J
MAGNESIUM, TOTAL	429	157	200	292	250	835
MANGANESE, TOTAL	10.8	5.5	5.8	10.4	14.7 J	7.1
MERCURY, TOTAL	0.08 U	0.11 U	0.11 U	0.12 U	0.09 U	0.079 U
NICKEL, TOTAL	2.1 U	0.9 U	2.2 U	4.3	3.5	1.3
POTASSIUM, TOTAL	249	139	225	226	211	149
SELENIUM, TOTAL	0.35	0.3 U	0.37	0.29 U	0.36 U	0.38
SODIUM, TOTAL	51.4 U	15.9 U	23 U	40.6	42.8	13.7 U
VANADIUM, TOTAL	10.5	7.9	8.3	25.8	12.3	10.4
ZINC, TOTAL	8.3	5.7	5.7	21.9	7.5	18

MG/KG - milligram per kilogram
J - value is estimated
U - not detected

TABLE 4-4
SURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TAL METALS

LOCATION	86-AST-SB07-00	86-AST-SB08-00	86-AST-SB09-00	86-GW18DW-00	86-GW19DW-00
DATE SAMPLED	02/26/95	02/26/95	02/26/95	02/22/95	03/14/95
DEPTH	0-12"	0-12"	0-12"	0-12"	0-12"
ANALYTES (mg/kg)					
ALUMINUM, TOTAL	5960	6660	6470	5470	5990
ARSENIC, TOTAL	1.1	1.8	1.4	1.1	0.56
BARIUM, TOTAL	43.5	17.3	37.7	13.5	15.8
CADMIUM, TOTAL	0.64	0.84	0.48 U	1.1	0.48
CALCIUM, TOTAL	4280 J	6950 J	4170	3850	4430
CHROMIUM, TOTAL	9 J	10.1 J	9.7	8.7	8.8
COBALT, TOTAL	0.65 U	0.63 U	0.38 U	0.98 U	0.48
COPPER, TOTAL	3.6	8.9	2.1	53.4 J	9.1
IRON, TOTAL	2930	4310	4590	5580	3940
LEAD, TOTAL	21.4	30.7	12.4 J	38.5	33.7
MAGNESIUM, TOTAL	402	681	249	341	363
MANGANESE, TOTAL	11.5 J	11.9 J	8.1	18.5	21.7
MERCURY, TOTAL	0.09 U	0.082 U	0.1 U	0.15 U	0.16
NICKEL, TOTAL	5.2	6.6	3.6	13.4	22.3
POTASSIUM, TOTAL	340	320	202	228	190
SELENIUM, TOTAL	0.37 U	0.37 U	0.29 J	0.69	0.32 U
SODIUM, TOTAL	32.4 U	41.9	31.2 U	41.1	42.7
VANADIUM, TOTAL	18.6	32.4	25.9	56.2	92.7
ZINC, TOTAL	20.1	21	5.4	39.9 J	35.8

MG/KG - milligram per kilogram
J - value is estimated
U - not detected

TABLE 4-5
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB01-02	86-AST-SB02-02	86-AST-SB02-05	86-AST-SB03-04	86-AST-SB04-02	86-AST-SB05-03
DATE SAMPLED	02/25/95	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95
DEPTH	3-5'	3-5'	9-11'	7-9'	3-5'	5-7'
VOLATILES (ug/kg)						
ACETONE	12 UJ	50 U	53 J	14 UJ	140	69 U
CARBON DISULFIDE	12 U	12 U	12 U	14 U	12 U	13 U
2-BUTANONE	12 U	12 U	12 U	14 U	12 U	8 J
TOLUENE	12 U	12 U	12 U	14 U	12 U	13 U
XYLENE (TOTAL)	12 U	12 U	5 J	14 U	12 U	13 U
SEMIVOLATILES (ug/kg)						
FLUORANTHENE	400 U	380 U	390 U	470 U	380 U	420 U
PYRENE	400 U	380 U	390 U	470 U	380 U	420 U
BUTYLBENZYLPHTHALATE	140 J	380 U	390 U	73 J	380 U	420 U
CHRYSENE	400 U	380 U	390 U	470 U	140 J	420 U
BIS(2-ETHYLHEXYL)PHTHALATE	400 U	380 U	390 U	470 U	45 J	860
BENZO(B)FLUORANTHENE	400 U	380 U	390 U	470 U	380 U	420 U
PESTICIDE/PCBS (ug/kg)						
4,4'-DDE	4 U	1.5 J	3.9 UJ	4.7 U	20 J	4.3 U
4,4'-DDD	5.5	4.5 J	3.9 UJ	4.7 U	14 J	4.3 U
4,4'-DDT	4 U	3.8 UJ	3.9 UJ	4.7 U	1.5 J	4.3 U

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-5
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB05-05	86-AST-SB06-04	86-AST-SB07-03	86-AST-SB08-04	86-AST-SB09-04	86-AST-SB10-04
DATE SAMPLED	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95	03/15/95
DEPTH	9-11'	7-9'	5-7'	7-9'	7-9'	7-9'
VOLATILES (ug/kg)						
ACETONE	24 U	54	23 U	29 U	42	54 UJ
CARBON DISULFIDE	12 U	14 U	13 U	12 U	14 U	14 U
2-BUTANONE	12 U	14 U	13 U	12 U	14 U	14 UJ
TOLUENE	12 U	14 U	13 U	12 U	14 U	14 U
XYLENE (TOTAL)	12 U	14 U	5 J	12 U	14 U	14 U
SEMIVOLATILES (ug/kg)						
FLUORANTHENE	410 U	470 U	430 U	410 U	460 U	450 U
PYRENE	410 U	470 U	430 U	410 U	460 U	450 U
BUTYLBENZYLPHTHALATE	410 U	470 U	430 U	410 U	460 U	120 J
CHRYSENE	410 U	470 U	430 U	410 U	460 U	450 U
BIS(2-ETHYLHEXYL)PHTHALATE	970	470 U	430 U	410 U	460 U	450 U
BENZO(B)FLUORANTHENE	410 U	470 UJ	430 U	410 U	460 UJ	450 U
PESTICIDE/PCBS (ug/kg)						
4,4'-DDE	4 U	4.7 UJ	4.3 U	4 U	4.6 UJ	NA
4,4'-DDD	4 U	4.7 UJ	4.3 U	4 U	4.6 UJ	NA
4,4'-DDT	4 U	4.7 UJ	4.3 U	4 U	4.6 UJ	NA

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-5
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-AST-SB11-03	86-AST-SB12-03	86-CP-SB01-02	86-CP-SB02-02	86-GW15IW-02	86-GW17IW-01
DATE SAMPLED	03/15/95	03/15/95	05/02/95	05/02/95	03/09/95	03/12/95
DEPTH	5-7'	5-7'	3-5'	3-5'	3-5'	1-3'
VOLATILES (ug/kg)						
ACETONE	13 UJ	41 UJ	72	23 U	17 U	250
CARBON DISULFIDE	13 U	13 U	12 U	12 U	12 U	11 U
2-BUTANONE	13 UJ	13 UJ	12 U	12 U	12 U	11 U
TOLUENE	13 U	13 U	12 U	12 U	12 U	11 U
XYLENE (TOTAL)	13 U	13 U	12 U	12 U	12 U	11 U
SEMIVOLATILES (ug/kg)						
FLUORANTHENE	430 U	430 U	400 U	400 U	410 U	360 U
PYRENE	430 U	430 U	400 U	400 U	410 U	360 U
BUTYLBENZYLPHTHALATE	300 J	430 U	400 U	400 U	410 U	360 U
CHRYSENE	430 U	430 U	400 U	400 U	410 U	360 U
BIS(2-ETHYLHEXYL)PHTHALATE	430 U	430 U	400 U	400 U	1100 U	360 U
BENZO(B)FLUORANTHENE	430 U	430 U	400 U	400 U	410 U	360 U
PESTICIDE/PCBS (ug/kg)						
4,4'-DDE	NA	NA	NA	NA	4 U	11 J
4,4'-DDD	NA	NA	NA	NA	4 U	36 J
4,4'-DDT	NA	NA	NA	NA	4 U	3.7 UJ

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-5
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TCL ORGANICS

LOCATION	86-GW17IW-02	86-GW18DW-02	86-GW19DW-02	86-WA-SB01-02	86-WA-SB02-03
DATE SAMPLED	03/12/95	02/22/95	03/14/95	05/02/95	05/02/95
DEPTH	3-5'	3-5'	3-5'	3-5'	5-7'
VOLATILES (ug/kg)					
ACETONE	82 U	40	11 U	15 U	120
CARBON DISULFIDE	12 U	13 U	11 U	3 J	15 U
2-BUTANONE	12 U	13 U	11 U	15 U	15 U
TOLUENE	12 U	250	11 U	15 U	15 U
XYLENE (TOTAL)	12 U	13 U	11 U	15 U	15 U
SEMIVOLATILES (ug/kg)					
FLUORANTHENE	400 U	430 U	62 J	480 U	500 U
PYRENE	400 U	430 U	57 J	480 U	500 U
BUTYLBENZYLPHTHALATE	400 U	430 U	380 U	480 U	500 U
CHRYSENE	400 U	430 U	42 J	480 U	500 U
BIS(2-ETHYLHEXYL)PHTHALATE	400 U	120 J	320 J	480 U	500 U
BENZO(B)FLUORANTHENE	400 U	430 U	43 J	480 U	500 U
PESTICIDE/PCBS (ug/kg)					
4,4'-DDE	4 J	4.3 UJ	3.4 J	NA	NA
4,4'-DDD	3.2 J	4.3 UJ	3.8 UJ	NA	NA
4,4'-DDT	4 UJ	4.3 UJ	3.8 UJ	NA	NA

UG/KG - microgram per kilogram
J - value is estimated
NA - not analyzed
U - not detected
UJ - not detected, value is estimated

TABLE 4-6
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TAL METALS

LOCATION	86-AST-SB01-02	86-AST-SB02-02	86-AST-SB02-05	86-AST-SB03-04	86-AST-SB04-02	86-AST-SB05-03
DATE SAMPLED	02/25/95	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95
DEPTH	3-5'	3-5'	9-11'	7-9'	3-5'	5-7'
ANALYTES (mg/kg)						
ALUMINUM, TOTAL	10900	10800	6860	19400	3950	12500
ANTIMONY, TOTAL	4 UJ	1.8 UJ	1.8 UJ	5.6 UJ	2.1 UJ	4.4 R
ARSENIC, TOTAL	0.93	0.82	1.3	1.1 J	0.59	1.6
BARIUM, TOTAL	22	15.3	19.3	26.2	9.7	14.8
CALCIUM, TOTAL	1050	672	2110	325	10300	1200 J
CHROMIUM, TOTAL	11.6	10.7	9.7	29.3	5.9	17.3 J
COBALT, TOTAL	0.58 U	0.56	0.38 U	0.81 U	0.45 U	0.64 U
COPPER, TOTAL	1.3	0.81	2.2	4	7.1	0.55
IRON, TOTAL	5620	9250	3210	6700	3430	10900
LEAD, TOTAL	10	13.2	5.7	15.9	10.2	9
MAGNESIUM, TOTAL	443	303	228	796	291	470
MANGANESE, TOTAL	11.2	6.6	5.3	10.3	10.4	8.3 J
NICKEL, TOTAL	2.1 U	1.9	11.2	2.9 U	2.7	3.3
POTASSIUM, TOTAL	426	208	241	1050	131	352
SELENIUM, TOTAL	0.35 U	0.34 U	0.35	0.41	0.3 U	0.41 U
SODIUM, TOTAL	90.2	147	128	145	39.5 U	130
VANADIUM, TOTAL	15.9	19.2	11.1	32.7	17	23.1
ZINC, TOTAL	3	2.5 U	3.2	4.7	7.6	4.1

MG/KG - milligram per kilogram
J - value is estimated
R - rejected
U - not detected
UJ - not detected, value is estimated

TABLE 4-6
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TAL METALS

LOCATION	86-AST-SB05-05	86-AST-SB06-04	86-AST-SB07-03	86-AST-SB08-04	86-AST-SB09-04	86-GW15IW-02
DATE SAMPLED	02/26/95	02/26/95	02/26/95	02/26/95	02/26/95	03/09/95
DEPTH	9-11'	7-9'	5-7'	7-9'	7-9'	3-5'
ANALYTES (mg/kg)						
ALUMINUM, TOTAL	11900	24900	13500	10900	9450	12200
ANTIMONY, TOTAL	4.8 R	2.7 UJ	4.6 R	4.4 R	2.8 UJ	4.5 UJ
ARSENIC, TOTAL	1.7 J	0.47 U	2.4	1.8	0.54	0.27 J
BARIUM, TOTAL	16.5	32.8	19.6	14.6	17.6	19.7
CALCIUM, TOTAL	1480 J	152	2130 J	140 J	51.9	4090
CHROMIUM, TOTAL	14.3 J	34.4	18.2 J	13.1 J	15.8	10.8
COBALT, TOTAL	1.2	1.2	0.67 U	0.63 U	0.7	0.65 U
COPPER, TOTAL	3.5	3.1	1.5	0.99	2.6	0.41 U
IRON, TOTAL	9580	5630	8820	9860	2090	7620
LEAD, TOTAL	8.7	16.6 J	10.9	8.3	11.3	10.3
MAGNESIUM, TOTAL	439	925	545	337	310	403
MANGANESE, TOTAL	8.9 J	12.3	10.2 J	6.5 J	8.5	7.1
NICKEL, TOTAL	28.2	3.7	4.5	5.3	1.9	2.4 U
POTASSIUM, TOTAL	287	1120	507	353	428	288
SELENIUM, TOTAL	0.42 U	0.37 U	0.39 U	0.34 U	0.38 U	0.35 U
SODIUM, TOTAL	111	112	71.8	81.3	45.3	48.4 U
VANADIUM, TOTAL	21.7	32.4	27.5	20.7	12.1	17.3
ZINC, TOTAL	5.1	7.9	5.4	2.5	3.5	5.8

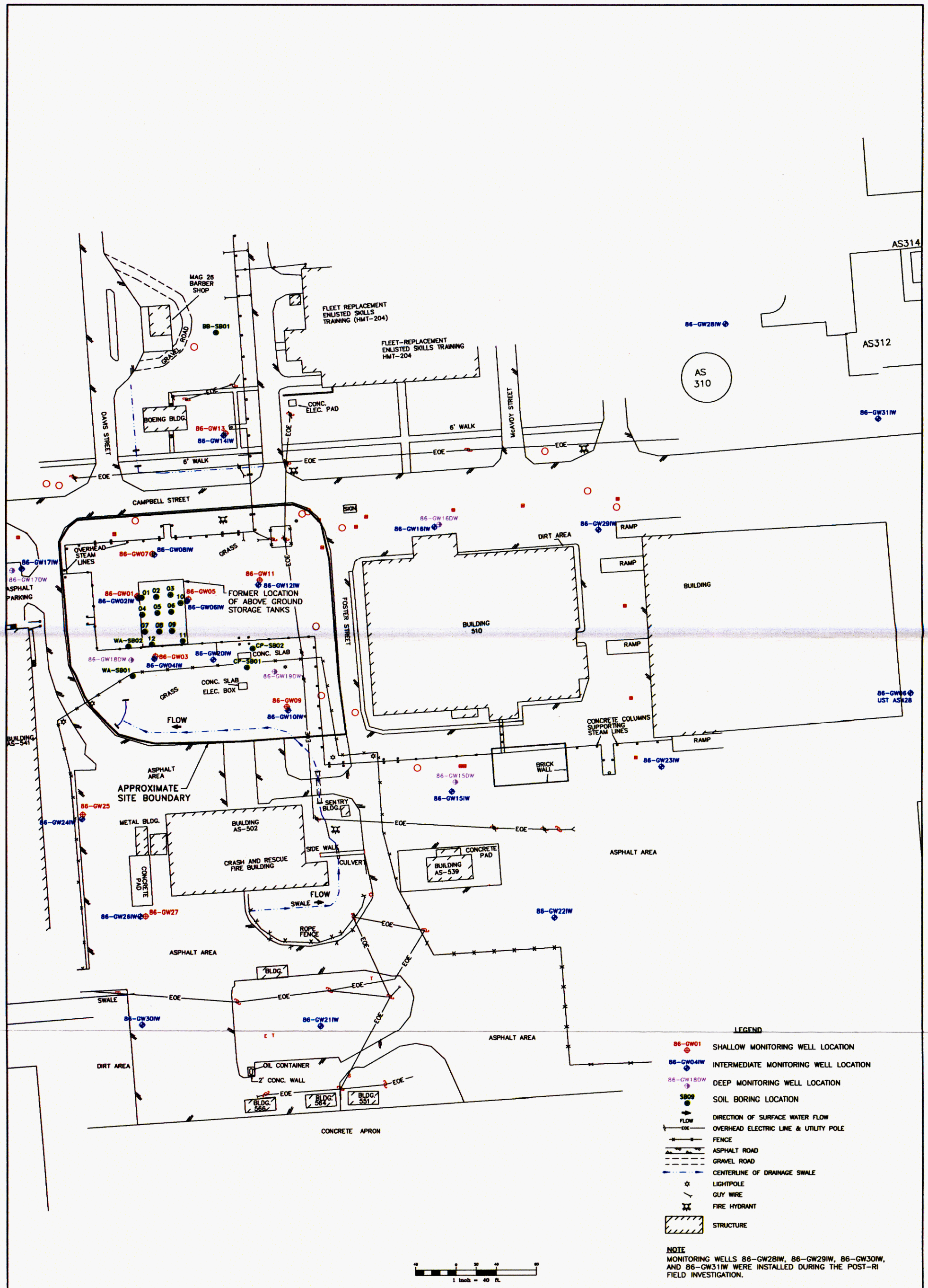
MG/KG - milligram per kilogram
J - value is estimated
R - rejected
U - not detected
UJ - not detected, value is estimated

TABLE 4-6
SUBSURFACE SOIL - POSITIVE DETECTION SUMMARY
SITE 86, ABOVEGROUND STORAGE TANK AREA
REMEDIAL INVESTIGATION, CTO-0303
MCAS, NEW RIVER, NORTH CAROLINA
TAL METALS

LOCATION	86-GW17IW-01	86-GW17IW-02	86-GW18DW-02	86-GW19DW-02
DATE SAMPLED	03/12/95	03/12/95	02/22/95	03/14/95
DEPTH	1-3'	3-5'	3-5'	3-5'
ANALYTES (mg/kg)				
ALUMINUM, TOTAL	2140	10400	12200	2940
ANTIMONY, TOTAL	2.2 UJ	2.2 J	4.2 UJ	2 UJ
ARSENIC, TOTAL	0.32 U	0.81	2.3	0.41 U
BARIUM, TOTAL	3.7	16.9	19.7	5.1
CALCIUM, TOTAL	1860	2650	466	530
CHROMIUM, TOTAL	2.4	12.6	14.9	8.7
COBALT, TOTAL	0.46 U	0.39	0.6 U	0.42 U
COPPER, TOTAL	0.79 U	2.3	0.94 J	2.1
IRON, TOTAL	938	4780	7860	1950
LEAD, TOTAL	3	7.7	12.3	4.1
MAGNESIUM, TOTAL	62.6	244	318	79.6
MANGANESE, TOTAL	2.1	5.5	3.6	6.4
NICKEL, TOTAL	0.95	1.4	2.2 U	1.4
POTASSIUM, TOTAL	88.1	275	257	48
SELENIUM, TOTAL	0.4 UJ	0.34 UJ	0.59	0.33 U
SODIUM, TOTAL	29.5	37	44.1	26.5 U
VANADIUM, TOTAL	3.1	17.5	19	4.7
ZINC, TOTAL	1.3	2.6	2.5	1.7

MG/KG - milligram per kilogram
J - value is estimated
R - rejected
U - not detected
UJ - not detected, value is estimated

Post Remedial Investigation Sampling (Baker, 1998)



LEGEND

86-GW01	SHALLOW MONITORING WELL LOCATION
86-GW04IW	INTERMEDIATE MONITORING WELL LOCATION
86-GW18DW	DEEP MONITORING WELL LOCATION
SB09	SOIL BORING LOCATION
FLOW	DIRECTION OF SURFACE WATER FLOW
EOE	OVERHEAD ELECTRIC LINE & UTILITY POLE
	FENCE
	ASPHALT ROAD
	GRAVEL ROAD
	CENTERLINE OF DRAINAGE SWALE
	LIGHTPOLE
	GUY WIRE
	FIRE HYDRANT
	STRUCTURE

NOTE

MONITORING WELLS 86-GW28IW, 86-GW29IW, 86-GW30IW, AND 86-GW31IW WERE INSTALLED DURING THE POST-RI FIELD INVESTIGATION.

LEGEND

SOURCE: LANTDIV, FEBRUARY 1992
SURVEY: BRENT A. LANIER AND ASSOCIATES, 1995

DRAWN	REL
REVIEWED	TFT
B.O.#	62470-303
CADD#	3030147S

NORTH

FEASIBILITY STUDY, CTO-0303
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
Coraopolis, Pennsylvania

Baker
Baker Environmental, Inc.

REMEDIAL INVESTIGATION
SAMPLING LOCATIONS
SITE 86, TANK AREA AS-419-AS421 AT MCAS

SCALE 1" = 40'
DATE JUNE 1998

FIGURE No. 1-2

TABLE 1-4

POST-RI GROUNDWATER-VOLATILE ORGANICS
SITE 86, TANK AREA AS419-AS421
NORTH CAROLINA

SAMPLE ID	IR86-GW28IW-01	IR86-GW29IW-01	IR86-GW30IW-01	IR86-GW16IW-97C	UST428-GW06-97C	IR86-GW29IW-97C	IR86-GW31IW-97C
DATE SAMPLED	07/01/97	07/01/97	07/01/97	9/7/97	9/7/97	9/17/97	9/17/97
VOLATILES (ug/L)							
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	2 J	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	2 JB	2 JB	22 BJD	2 JB
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	56	10 U	3 J	3 J	67 D	2 J
CHLOROFORM	10 U	10 U	10 U	10 U	50	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	600	10 U	2 J	2 J	700 D	9 J
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	3 J	10 U	10 U

NOTES

U = Not detected

J = Estimated Value

B = Detected in Blank

D = Sample dilution required

ug/L = micrograms per liter

TABLE 1-4

POST-RI GROUNDWATER-VOLATILE ORGANICS
SITE 86, TANK AREA AS419-AS421
NORTH CAROLINA

SAMPLE ID	IR86-GW28IW-01	IR86-GW29IW-01	IR86-GW30IW-01	IR86-GW16IW-97C	UST428-GW06-97C	IR86-GW29IW-97C	IR86-GW31IW-97C
DATE SAMPLED	07/01/97	07/01/97	07/01/97	9/7/97	9/7/97	9/17/97	9/17/97
VOLATILES (ug/L) (cont)							
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
XYLENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U

NOTES
U = Not detected
J = Estimated Value
B = Detected in Blank
D = Sample dilution required
ug/L = micrograms per liter

Amended Remedial Investigation (CH2M HILL Hill, Baker, CDM, 2003)

TABLE 3-1

SUMMARY OF SAMPLES COLLECTED
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample ID	Date Sampled	Sample Interval (Feet)	Media		Analysis			Comments
			Soil	Groundwater	Mobile Lab VOA	Fixed-Base VOA	NA Parameters(1)	
IR86-IS01-01	8/21/2001	40-44		X	X			
IR86-IS01-02	8/21/2001	48-52		X	X			
IR86-IS01-03	8/21/2001	56-60		X	X			
IR86-IS02-01	8/21/2001	40-44		X	X			
IR86-IS02-02	8/21/2001	44-47.5		X	X			
IR86-IS02-02	8/21/2001	3-5	X			X		
IR86-IS02-03	8/21/2001	5-7	X			X		
IR86-IS03-01	8/21/2001	40-44		X	X			
IR86-IS03-02	8/21/2001	48-52		X	X			
IR86-IS03-01	8/21/2001	1-3	X			X		
IR86-IS03-01D	8/21/2001	1-3	X			X		Duplicate
IR86-IS03-04	8/21/2001	7-9	X			X		
IR86-IS04-01	8/22/2001	40-44		X	X			
IR86-IS04-02	8/22/2001	48-52		X	X			
IR86-IS04-03	8/22/2001	56-60		X	X			
IR86-IS04-01	8/22/2001	1-3	X			X		
IR86-IS04-02	8/22/2001	3-5	X			X		
IR86-IS05-01	8/22/2001	40-44		X	X			
IR86-IS05-02	8/22/2001	48-52		X	X			
IR86-IS05-01	8/22/2001	1-3	X			X		
IR86-IS05-03	8/22/2001	5-7	X			X		
IR86-IS06-01	8/22/2001	40-44		X	X			
IR86-IS06-02	8/22/2001	48-52		X	X			
IR86-IS06-03	8/22/2001	56-60		X	X			
IR86-IS07-01	8/22/2001	40-44		X	X			
IR86-IS07-02	8/22/2001	48-52		X	X			
IR86-IS08-01	8/23/2001	40-44		X	X			
IR86-IS08-02	8/23/2001	48-52		X	X			
IR86-IS09-01	8/23/2001	40-44		X	X			
IR86-IS09-02	8/23/2001	48-52		X	X			
IR86-IS10-01	8/23/2001	30-34		X	X			
IR86-IS10-02	8/23/2001	40-44		X	X			
IR86-IS11-01	8/23/2001	30-34		X	X			
IR86-IS11-02	8/23/2001	40-44		X	X			
IR86-IS12-01	8/23/2001	30-34		X	X			
IR86-IS12-02	8/23/2001	40-44		X	X			
IR86-IS13-01	8/24/2001	30-34		X	X			

TABLE 3-1

SUMMARY OF SAMPLES COLLECTED
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample ID	Date Sampled	Sample Interval (Feet)	Media		Analysis			Comments
			Soil	Groundwater	Mobile Lab VOA	Fixed-Base VOA	NA Parameters(1)	
IR86-IS13-02	8/24/2001	40-44		X	X			
IR86-IS14-01	8/24/2001	30-34		X	X			
IR86-IS14-02	8/24/2001	40-44		X	X			
IR86-IS15-01	8/24/2001	40-44		X	X			
IR86-IS15-02	8/24/2001	48-52		X	X			
IR86-IS16-01	8/24/2001	40-44		X	X			
IR86-IS16-02	8/24/2001	48-52		X	X			
IR86-IS17-01	8/24/2001	40-44		X	X			
IR86-IS18-01	8/24/2001	40-44		X	X			
IR86-IS19-01	8/24/2001	40-44		X	X			
IR86-IS20-01	1/12/2002	10-14		X	X			
IR86-IS20-02	1/12/2002	20-24		X	X			
IR86-IS21-01	1/12/2002	10-14		X	X		X	
IR86-IS21-02	1/12/2002	20-24		X	X		X	
IR86-IS22-01	1/12/2002	10-14		X	X		X	
IR86-IS22-02	1/12/2002	20-24		X	X		X	
IR86-IS23-01	1/12/2002	10-14		X	X		X	
IR86-IS23-02	1/12/2002	20-24		X	X		X	
IR86-IS24-03	1/12/2002	30-34		X	X		X	
IR86-IS24-04	1/12/2002	40-44		X	X		X	
IS86-IS24-05	1/12/2002	50-54		X	X		X	
IR86-IS24-05 DUP	1/12/2002	50-54		X	X			Duplicate
IR86-IS25-03	1/12/2002	30-34		X	X		X	
IR86-IS25-04	1/12/2002	40-44		X	X		X	
IR86-IS25-05	1/12/2002	50-54		X	X		X	
IR86-IS26-03	1/12/2002	30-34		X	X		X	
IR86-IS26-04	1/12/2002	40-44		X	X	X	X	
IR86-IS26-05	1/12/2002	50-54		X	X		X	
IR86-IS27-03	1/12/2002	30-34		X	X		X	
IR86-IS27-04	1/12/2002	40-44		X	X		X	
IR86-IS27-05	1/12/2002	50-54		X	X		X	
IR86-IS28-03	1/13/2002	30-34		X	X		X	
IR86-IS28-04	1/13/2002	40-44		X	X	X	X	
IR86-IS28-05	1/13/2002	50-54		X	X		X	
IR86-IS28-03 DUP	1/13/2002	30-34		X	X			Duplicate
IR86-IS29-03	1/13/2002	30-34		X	X		X	
IR86-IS29-04	1/13/2002	40-44		X	X		X	

TABLE 3-1

SUMMARY OF SAMPLES COLLECTED
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample ID	Date Sampled	Sample Interval (Feet)	Media		Analysis			Comments
			Soil	Groundwater	Mobile Lab VOA	Fixed-Base VOA	NA Parameters(1)	
IR86-IS29-05	1/13/2002	50-54		X	X			
IR86-IS30-03	1/13/2002	30-34		X	X		X	
IR86-IS30-04	1/13/2002	40-44		X	X		X	
IR86-IS30-05	1/13/2002	50-54		X	X		X	
IR86-IS31-03	1/13/2002	30-34		X	X		X	
IR86-IS31-04	1/13/2002	40-44		X	X		X	
IR86-IS31-05	1/13/2002	50-54		X	X		X	
IR86-IS31-04 DUP	1/13/2002	40-44		X	X			Duplicate
IR86-IS32-03	1/13/2002	30-34		X	X	X	X	
IR86-IS32-04	1/13/2002	40-44		X	X		X	
IR86-IS32-05	1/13/2002	50-54		X	X		X	
IR86-IS33-03	1/14/2002	30-34		X	X		X	
IR86-IS33-04	1/14/2002	40-44		X	X		X	
IR86-IS33-05	1/14/2002	50-54		X	X		X	
IR86-IS34-03	1/14/2002	30-34		X	X		X	
IR86-IS34-04	1/14/2002	40-44		X	X	X	X	
IR86-IS34-04 DUP	1/14/2002	40-44		X	X			Duplicate
IR86-IS34-05	1/14/2002	50-54		X	X		X	
IR86-IS35-03	1/14/2002	30-34		X	X			
IR86-IS35-04	1/14/2002	40-44		X	X		X	
IR86-IS35-05	1/14/2002	50-54		X	X		X	
IR86-IS36-03	1/14/2002	30-34		X	X		X	
IR86-IS36-04	1/14/2002	40-44		X	X		X	
IR86-IS37-03	1/14/2002	30-34		X	X		X	
IR86-IS37-04	1/14/2002	40-44		X	X		X	
IR86-IS37-05	1/14/2002	50-54		X	X		X	
IR86-IS38-03	1/14/2002	30-34		X	X		X	
IR86-IS38-04	1/14/2002	40-44		X	X		X	
IR86-IS38-05	1/14/2002	50-54		X	X		X	
IR86-IS39-03	1/14/2002	30-34		X	X		X	
IR86-IS39-04	1/14/2002	40-44		X	X	X	X	
IR86-IS39-05	1/14/2002	50-54		X	X		X	
IR86-IS39-03 DUP	1/14/2002	30-34		X	X			Duplicate
IR86-IS40-01	1/15/2002	10-14		X	X		X	
IR86-IS40-02	1/15/2002	20-24		X	X		X	
IR86-IS41-01	1/15/2002	10-14		X	X			
IR86-IS41-02	1/15/2002	20-24		X	X			

TABLE 3-1

SUMMARY OF SAMPLES COLLECTED
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample ID	Date Sampled	Sample Interval (Feet)	Media		Analysis			Comments
			Soil	Groundwater	Mobile Lab VOA	Fixed-Base VOA	NA Parameters[1]	
IR86-IS41-03	1/15/2002	30-34		X	X		X	
IR86-IS41-04	1/15/2002	40-44		X	X		X	
IR86-IS41-05	1/15/2002	50-54		X	X		X	
IR86-IS42-03	1/15/2002	30-34		X	X	X		
IR86-IS42-04	1/15/2002	40-44		X	X		X	
IR86-IS42-05	1/15/2002	50-54		X	X		X	
IR86-IS42-04 DUP	1/15/2002	40-44		X	X			Duplicate
IR86-IS43-03	1/15/2002	30-34		X	X		X	
IR86-IS43-04	1/15/2002	40-44		X	X			
IR86-ER01-01C	8/21/2001	--			X		X	Equipment Rinsate
IR86-ER02-01C	8/22/2001	--			X		X	Equipment Rinsate
IR86-ER03-01C	8/23/2001	--			X			Equipment Rinsate
IR86-ER04-02A	1/15/2002				X			Equipment Rinsate

Note:

[1] NA parameters includes field analysis of temperature, pH, ORP, ferrous iron, and alkalinity

TABLE 4-8

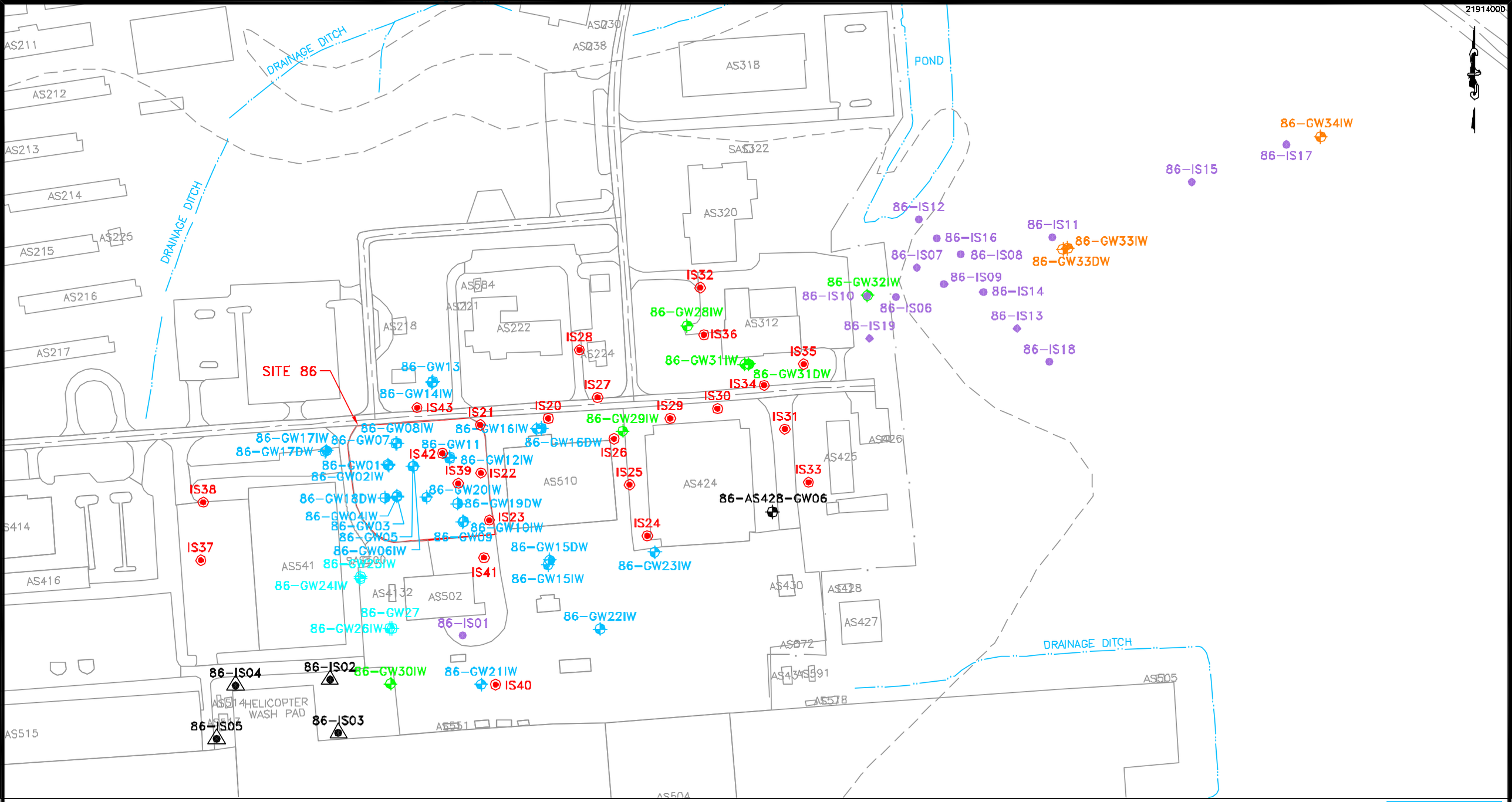
STATISTICAL SUMMARY
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Compound	Minimum Detected	Maximum Detected	Frequency of Detection	Frequency of NC Standard Exceedences	Frequency of Federal Standard Exceedences	Arithmatic Mean Positive Detects	Location of Maximum Detect
Amended RI Groundwater Analytical Results - Mobile Laboratory							
Benzene	1	12	20/105	12/20	5/20	3.7529	IR86-IS04-03
Tetrachloroethene	1	18.444	14/105	14/14	3/14	4.4844	IR86-IS29-03
Trichloroethene	1	3758	57/105	49/57	36/57	158.2071	IR86-IS41-03
cis-1,2-Dichloroethene	1.074	149.286	70/105	7/70	7/70	31.2491	IR86-IS41-04
Trans-1,2-Dichloroethene	1.15	1.825	2/105	0/2	0/2	1.4875	IR86-IS41-04
Vinyl Chloride	1	9	2/105	2/2	1/2	5	IR86-IS01-01
Amended RI Groundwater Analytical Results - Fixed-Base Laboratory							
Benzene	6	7	2/4	2/2	2/2	6.5000	IS07-01D
Carbon disulfide	1 J	1 J	1/4	0/1	0/1	1.0000	IR86-IS07-01
Chloromethane	1 J	1 J	1/4	0/1	0/1	0.7000	IR86-IS01-01
cis-1,2-Dichloroethene	11	26	3/4	0/3	0/3	16.3333	IR86-IS01-01
Methyl acetate	7	7	1/4	0/1	0/1	7.0000	IR86-IS07-01
Trichloroethene	46	52	2/4	2/2	2/2	49.0000	IS07-01D
Vinyl Chloride	21	21	1/4	1/1	1/1	21.0000	IR86-IS01-01
Xylene (total)	0	0	0/4	0/0	0/0		
LTM Groundwater Analytical Results - Fixed-Base Laboratory							
1,1,2-Trichloro-1,2,2-Trifluoroethane	590	660	2/2	0/2	0/2	625	IR86-GW10IW-02A
1,1-Dichloroethane	6	61	2/19	0/2	0/2	33.5	IR86-GW25IW-02A
1,1-Dichloroethene	800	800	1/19	1/1	1/1	800	IR86-GW25IW-02A
1,2-Dichloroethane	5	5	1/19	0/1	0/1	5	IR86-GW25IW-02A
Benzene	3 J	4 J	3/19	3/3	0/3	3.6667	IR86-AS428-GWO6-02A,IR86-GW15IW-02A
Cis-1,2-Dichloroethene	4 J	220	11/19	3/11	3/11	54.1818	IR86-GW15IW-02A
Tetrachloroethene	5 J	120 J	2/19	2/2	2/2	62.5	IR86-GW10IW-02A
Total 1,2-Dichloroethene	4 J	220	11/19	--	--	54.1818	IR86-GW15IW-02A
Trans-1,2-Dichloroethene	9	9	1/19	0/1	0/1	9	IR86-GW15IW-02A
Trichloroethene	4 J	840	8/19	8/8	6/8	150.75	IR86-GW29IW-02A
Vinyl Chloride	1 J	40	5/19	5/5	5/5	9	IR86-GW10IW-02A
Xylenes (Total)	9	9	1/19	0/1	0/1	9	IR86-GW25IW-02A
Antimony	4.8 B	4.8 B	1/1	0/1	0/1	4.8	

TABLE 4-8

STATISTICAL SUMMARY
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI INVESTIGATION, CTO-0191
MCB, CAMP LEJEUNE, NORTH CAROLINA

Compound	Minimum Detected	Maximum Detected	Frequency of Detection	Frequency of NC Standard Exceedences	Frequency of Federal Standard Exceedences	Arithmatic Mean Positive Detects	Location of Maximum Detect
Arsenic	3 B	3 B	1/1	0/1	0/1	3	
Barium	14	14	1/1	0/1	0/1	14	
Beryllium	0.59 B	0.59 B	1/1	0/1	0/1	0.59	
Calcium	130000	130000	1/1	0/1	0/1	130000	
Chloride	24	24	1/1	0/1	0/1	24	
Cobalt	0.8 B	0.8 B	1/1	0/1	0/1	0.8	
Iron	5700	5700	1/1	1/1	1/1	5700	
Magnesium	3100	3100	1/1	0/1	0/1	3100	
Manganese	68	68	1/1	1/1	1/1	68	
Potassium	2600	2600	1/1	0/1	0/1	2600	
Sodium	16000	16000	1/1	0/1	0/1	16000	
Sulfate as SO4	32	32	1/1	0/1	0/1	32	
Zinc	3.1 B	3.1 B	1/1	0/1	0/1	3.1	
Amended RI Subsurface Soil Analytical Results - Fixed-Base Laboratory							
Acetone	15 J	65 J	9/9	0/9	0/9	34	IR86-IS03-04
Bromoform	2 J	2 J	1/9	1/1	0/1	2	IR86-IS05-03
Carbon disulfide	1 J	1 J	2/9	0/2	0/2	1	IR86-IS03-01,IR86-IS04-01
cis-1,2-Dichloroethene	2 J	3 J	2/9	0/2	0/2	3	IR86-IS04-01
Methylene Chloride	2 J	6 J	9/9	0/9	0/9	3	IR86-IS03-04
Toluene	1 J	2 J	4/9	0/4	0/4	2	IR86-IS03-01,IR86-IS04-02
Trichloroethene	4 J	43	2/9	1/2	1/2	24	IR86-IS04-02
Xylene (total)	2 J	2 J	1/9	0/1	0/1	2	IR86-IS04-01



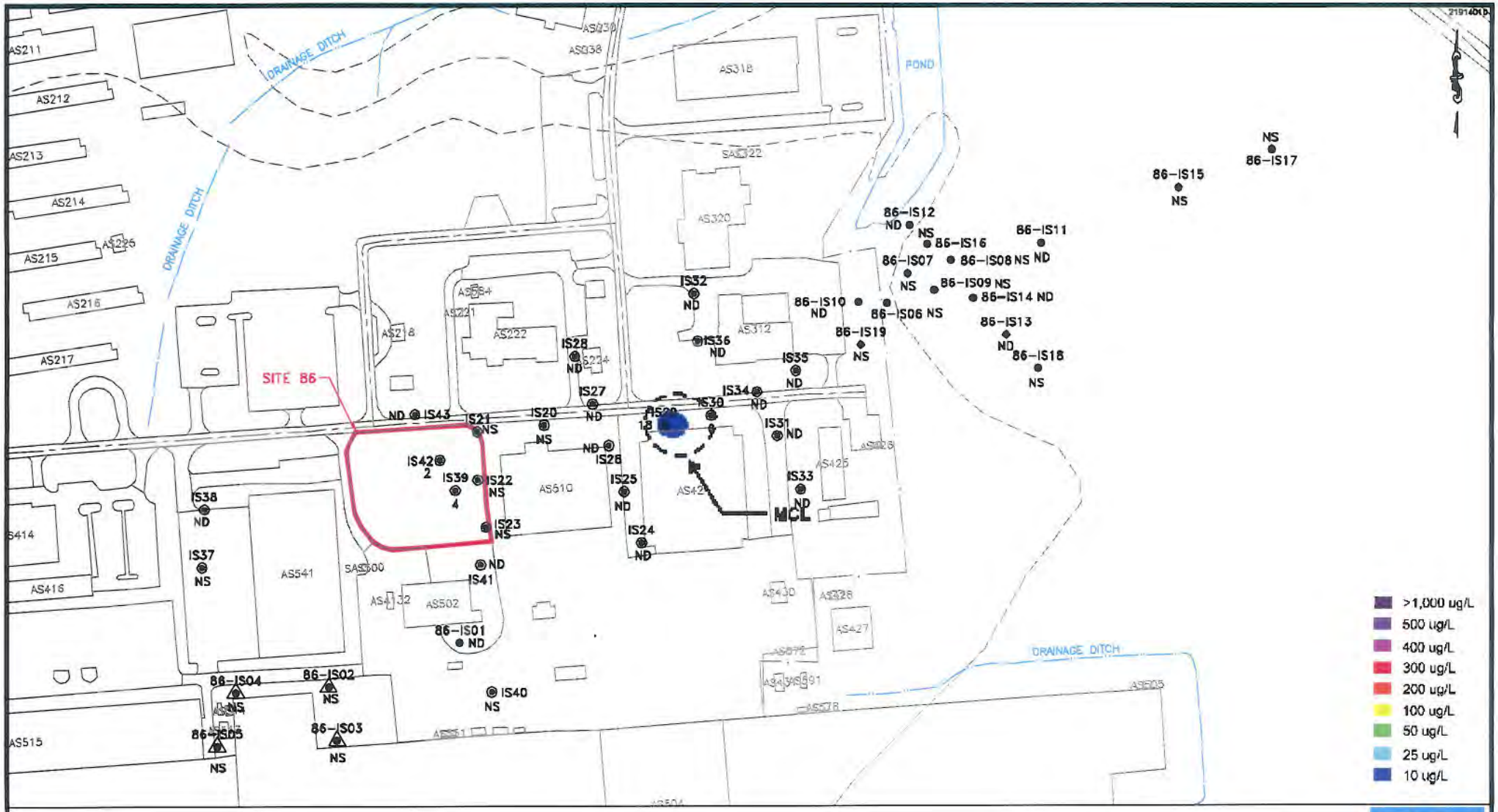
Baker
Baker Environmental, Inc.

LEGEND

- SHALLOW MONITORING WELL (RI – 1995)
- INTERMEDIATE MONITORING WELL (UST PROGRAM)
- INTERMEDIATE MONITORING WELL (RI – 1995)
- INTERMEDIATE MONITORING WELL (POST RI – 1997)
- INTERMEDIATE MONITORING WELL (AMENDED RI – 2002)
- DEEP MONITORING WELL (RI – 1995)
- DEEP MONITORING WELL (POST RI – 1995)
- DEEP MONITORING WELL (POST RI – 1997)
- DEEP MONITORING WELL (AMENDED RI – 2002)
- AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- JANUARY 2002 GROUNDWATER SAMPLING LOCATION

SOURCE: MCB CAMP LEJEUNE, 2000.

FIGURE 3-1
SAMPLE LOCATION MAP
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



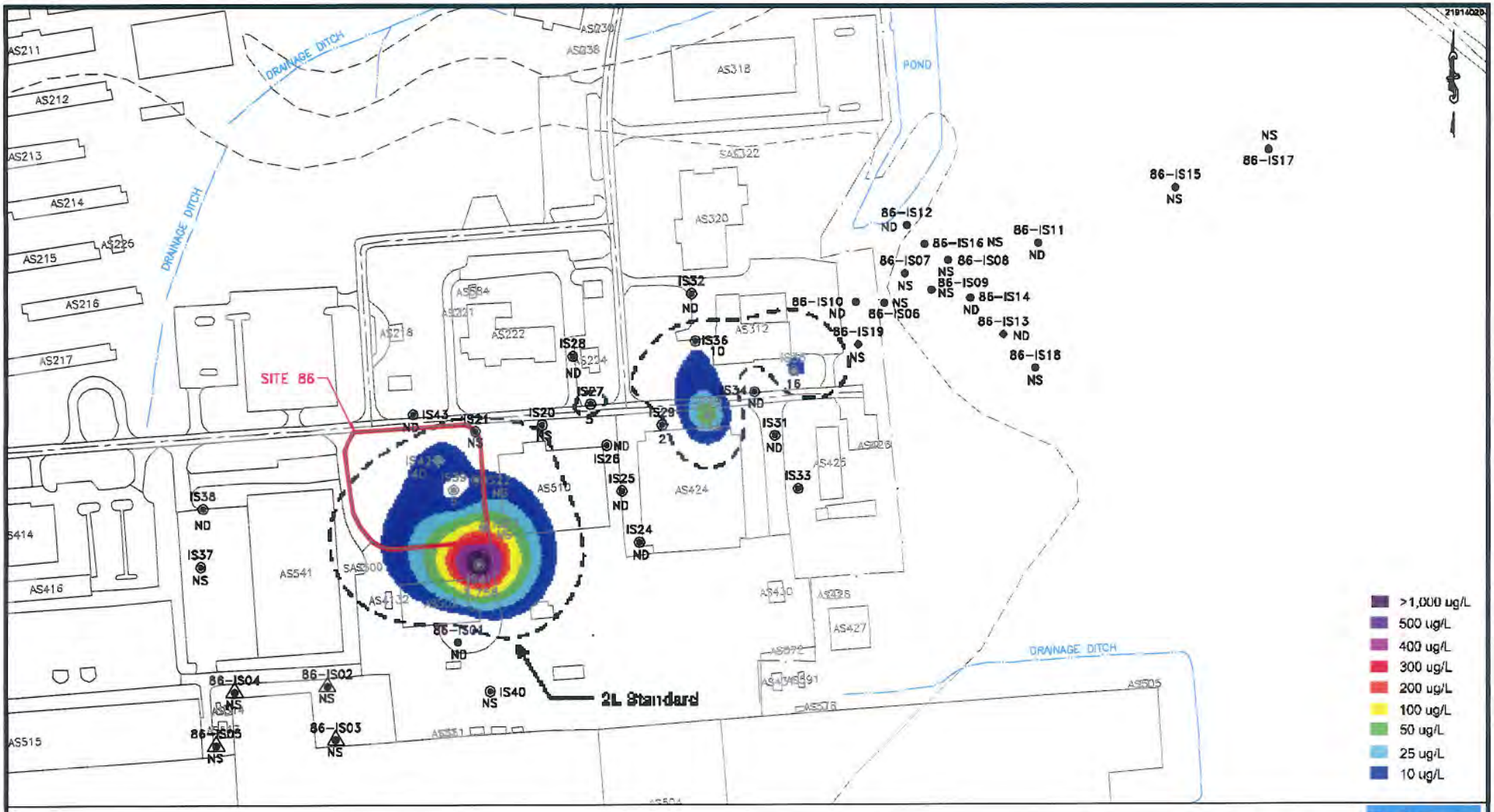
LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- △ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◎ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-1
EXTENT OF PCE ABOVE THE DETECTION LIMIT (30 TO 34 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SOURCE: MCB CAMP LEJEUNE, 2000.



Baker
Baker Environmental Inc.

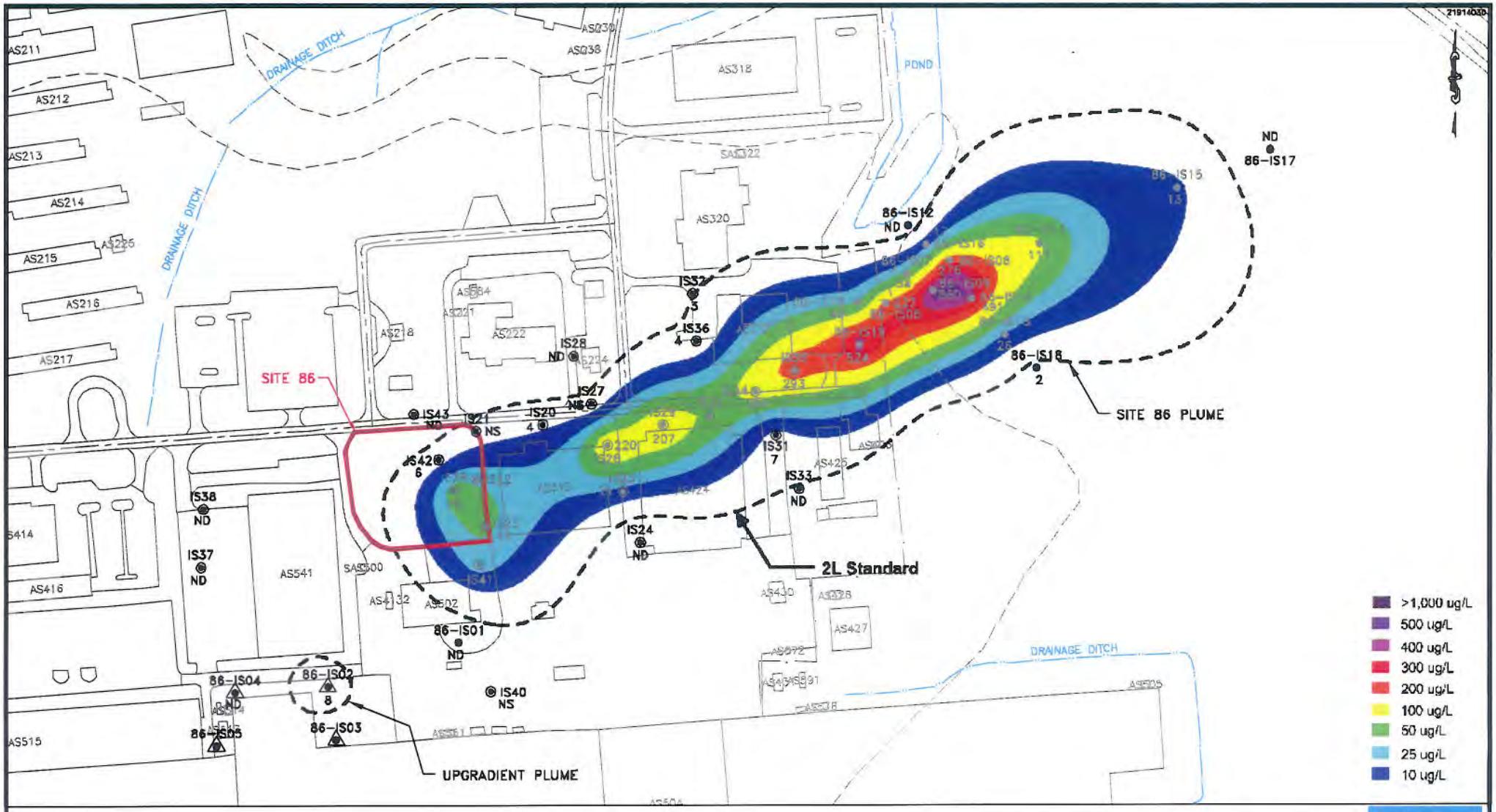
LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- △ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4–2
EXTENT OF TCE ABOVE THE 2L STANDARD (30 TO 34 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SOURCE: MCB CAMP LEJEUNE, 2000.



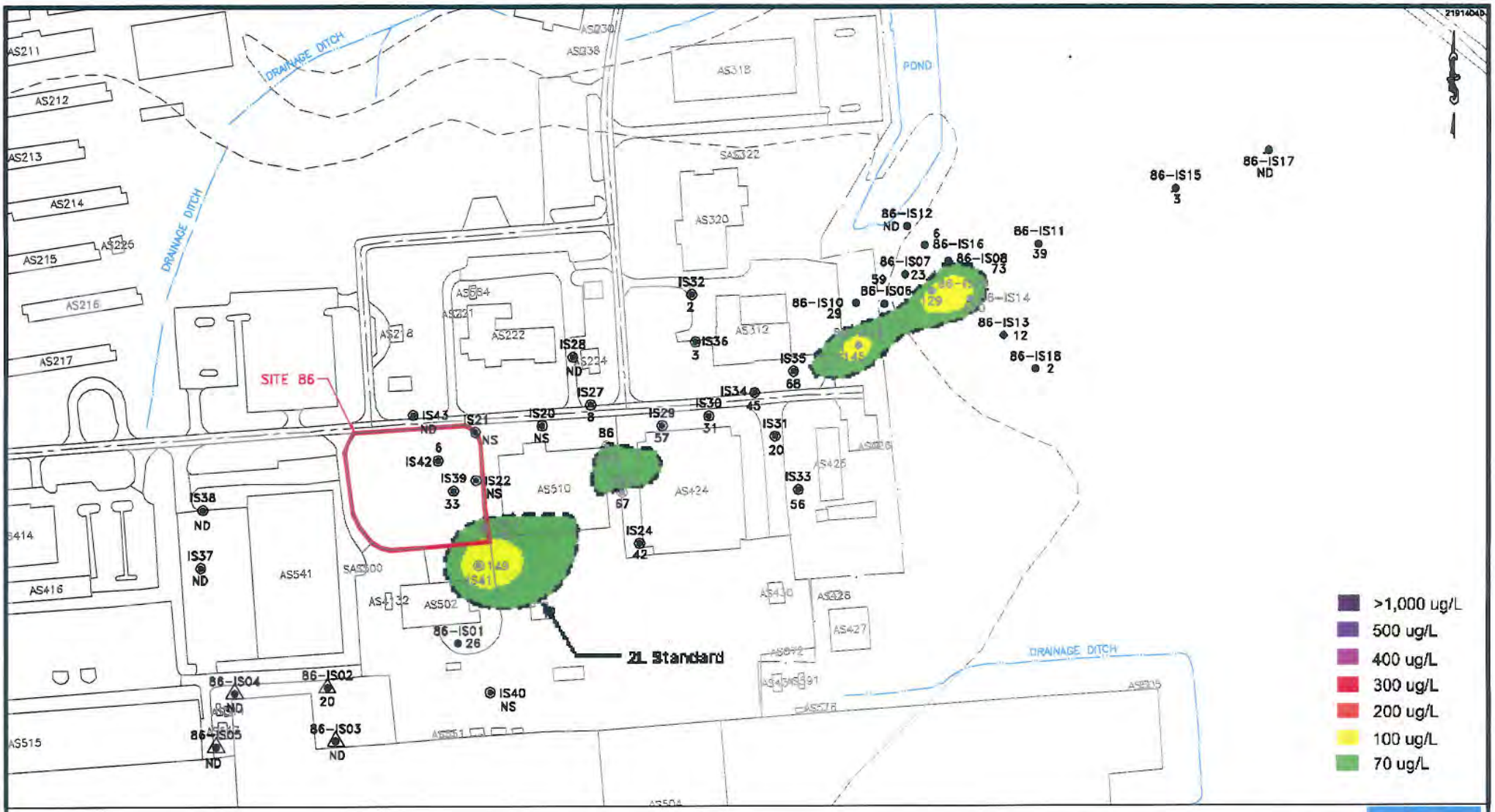
SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-3
EXTENT OF TCE ABOVE THE 2L STANDARD (40 TO 44 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



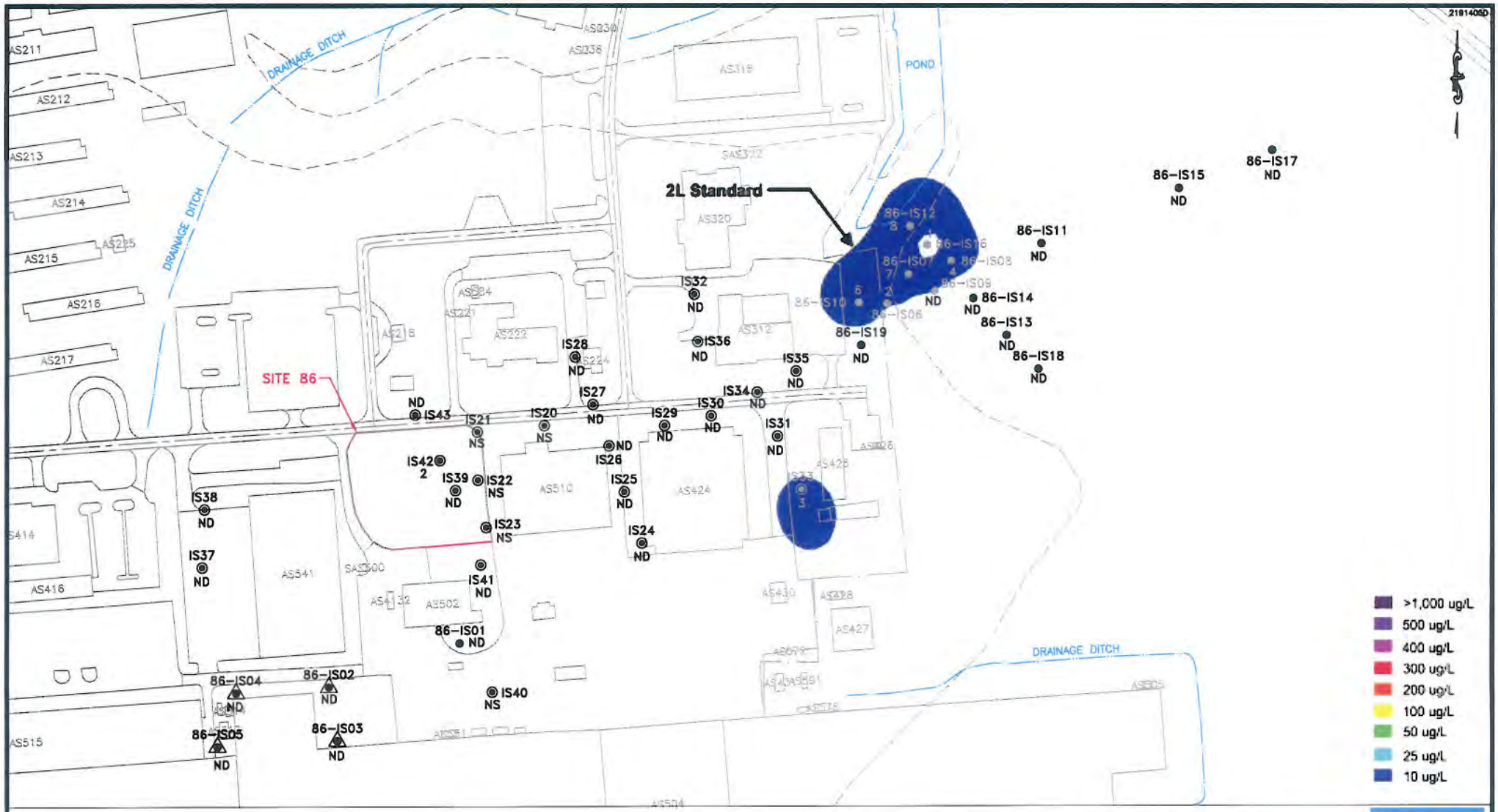
SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- △ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-4
EXTENT OF cis-DCE ABOVE THE 2L STANDARD (40 TO 44 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



Baker
Baker Environmental, Inc.

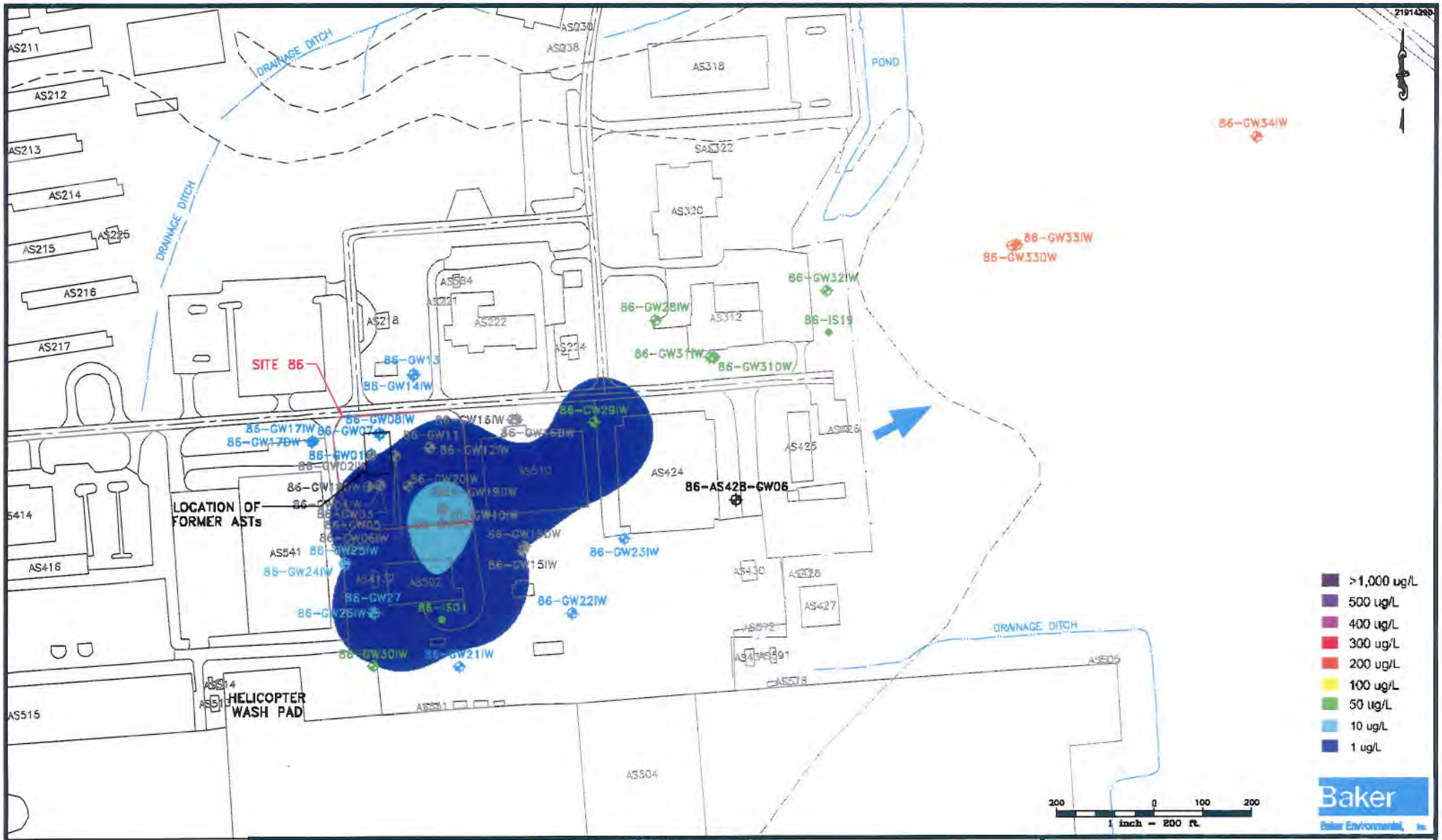
SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-5
EXTENT OF BENZENE ABOVE THE 2L STANDARD (40 TO 44 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

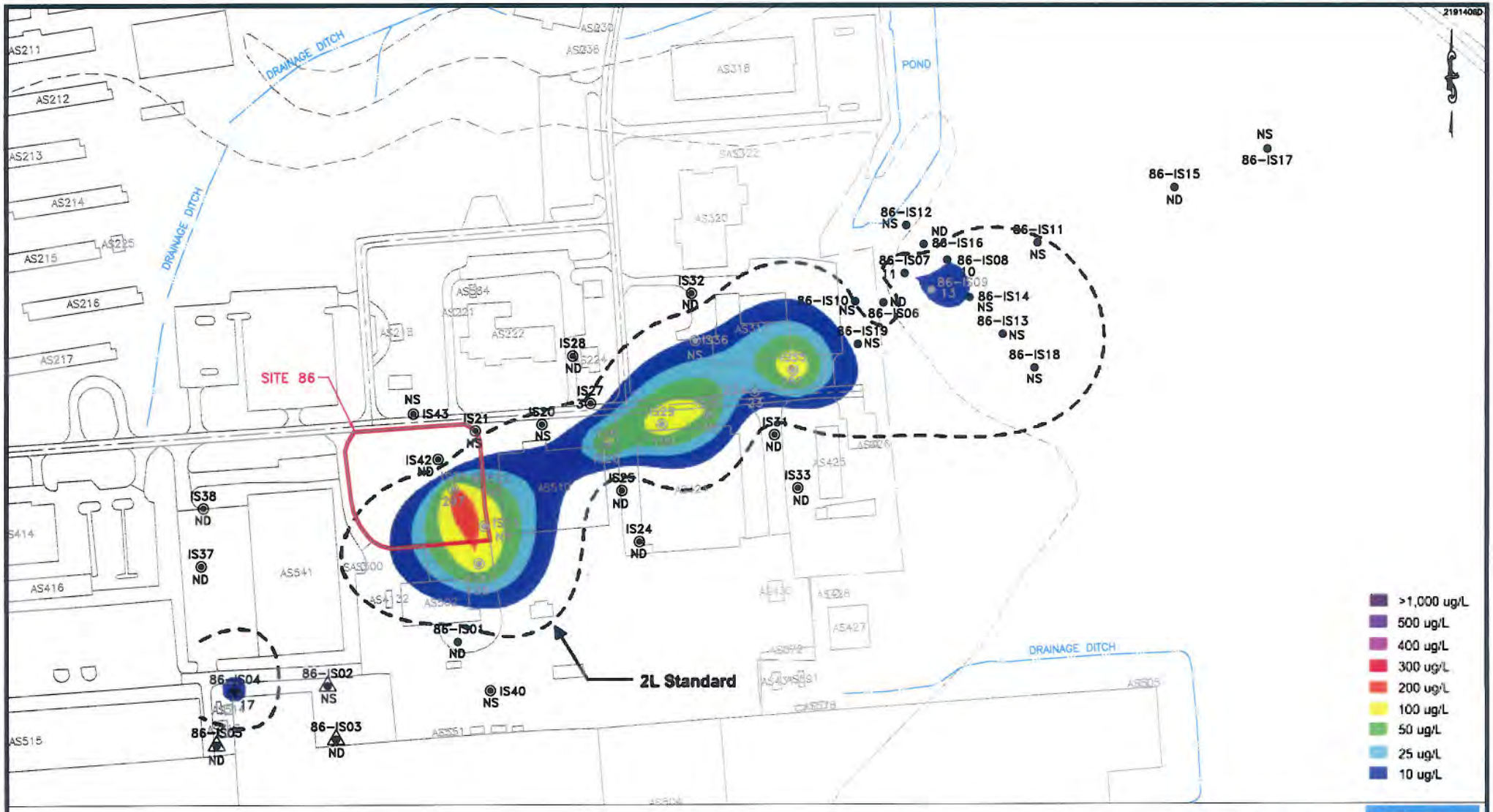


SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- SHALLOW MONITORING WELL (RI – 1995)
- INTERMEDIATE MONITORING WELL (UST PROGRAM)
- INTERMEDIATE MONITORING WELL (RI – 1995)
- INTERMEDIATE MONITORING WELL (POST RI – 1997)
- INTERMEDIATE MONITORING WELL (AMENDED RI – 2002)
- DEEP MONITORING WELL (RI – 1995)
- AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- DEEP MONITORING WELL (POST RI – 1995)
- DEEP MONITORING WELL (POST RI – 1997)
- DEEP MONITORING WELL (AMENDED RI – 2002)
- FENCE
- GROUND SURFACE ELEVATION CONTOUR
- PREDOMINANT GROUNDWATER FLOW DIRECTION (CASTLE HAYNE AQUIFER)

FIGURE 4-5
EXTENT OF VINYL CHLORIDE ABOVE DETECTION LIMITS IN INTERMEDIATE WELLS
AMENDED RI REPORT
CTO – 0191
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



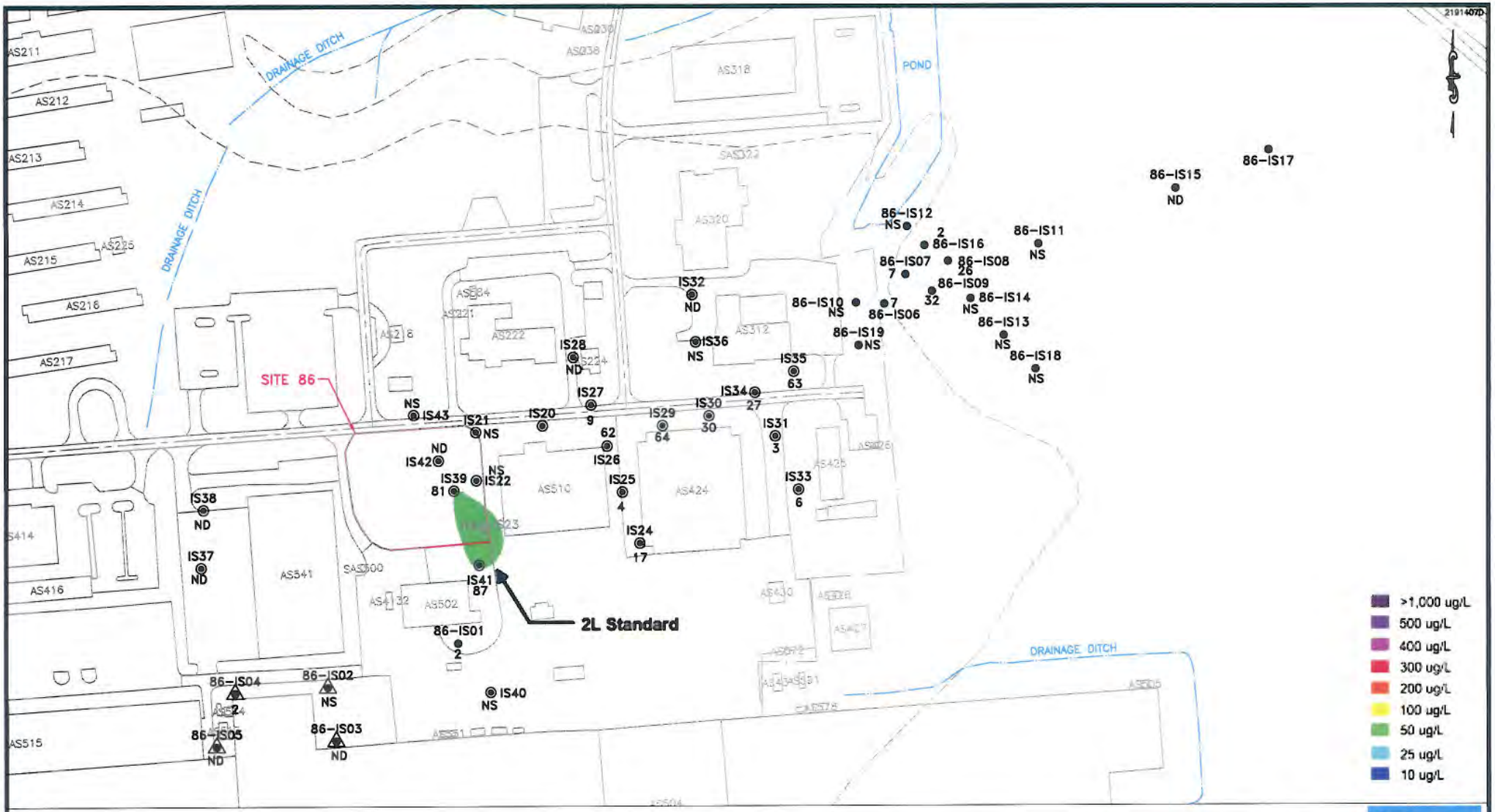
LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-6
EXTENT OF TCE ABOVE THE 2L STANDARD (50 TO 54 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SOURCE: MCB CAMP LEJEUNE, 2000.



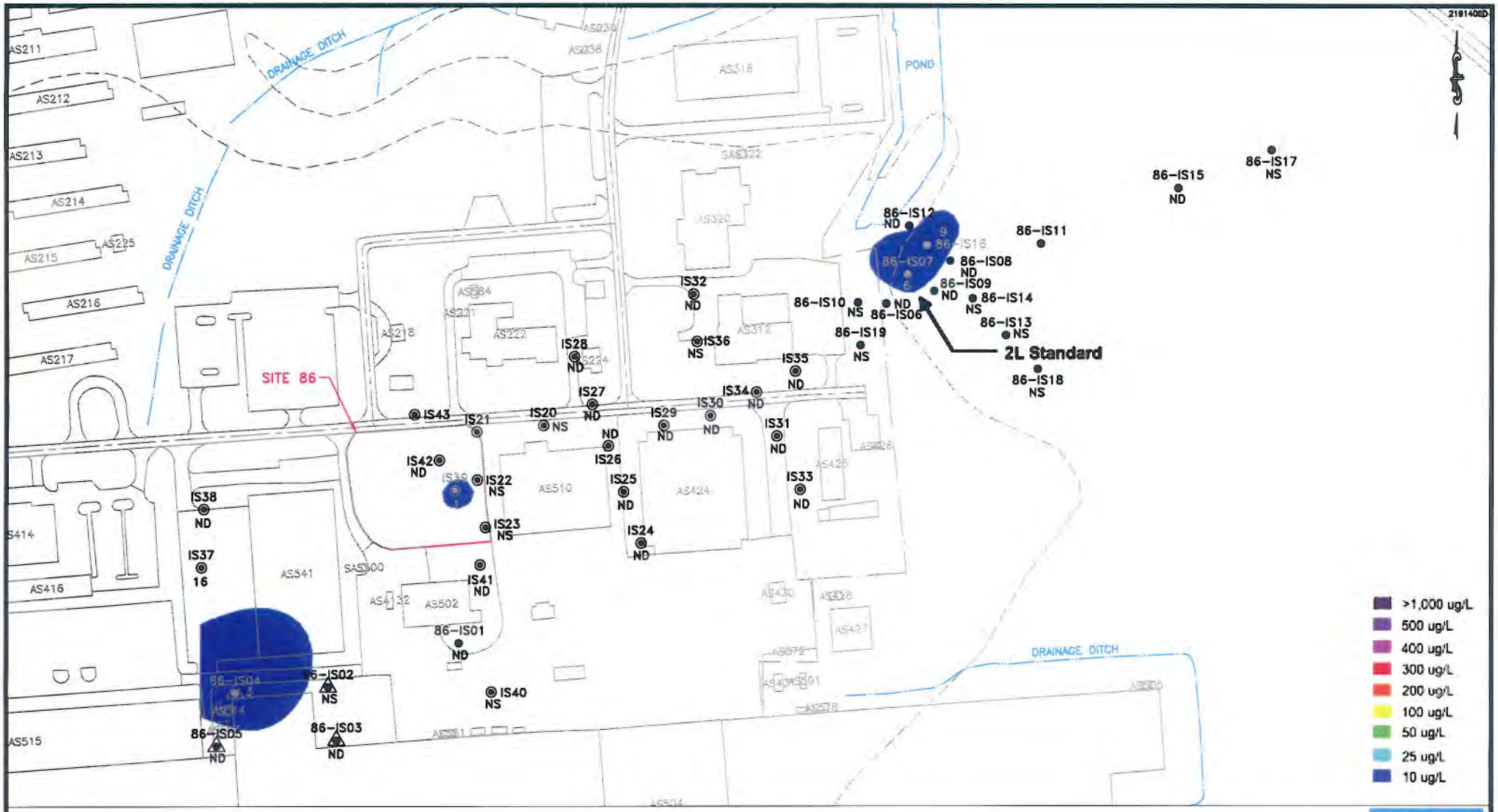
LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 4-7
EXTENT OF cis-DCE ABOVE THE 2L STANDARD (50 TO 54 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SOURCE: MCB CAMP LEJEUNE, 2000.



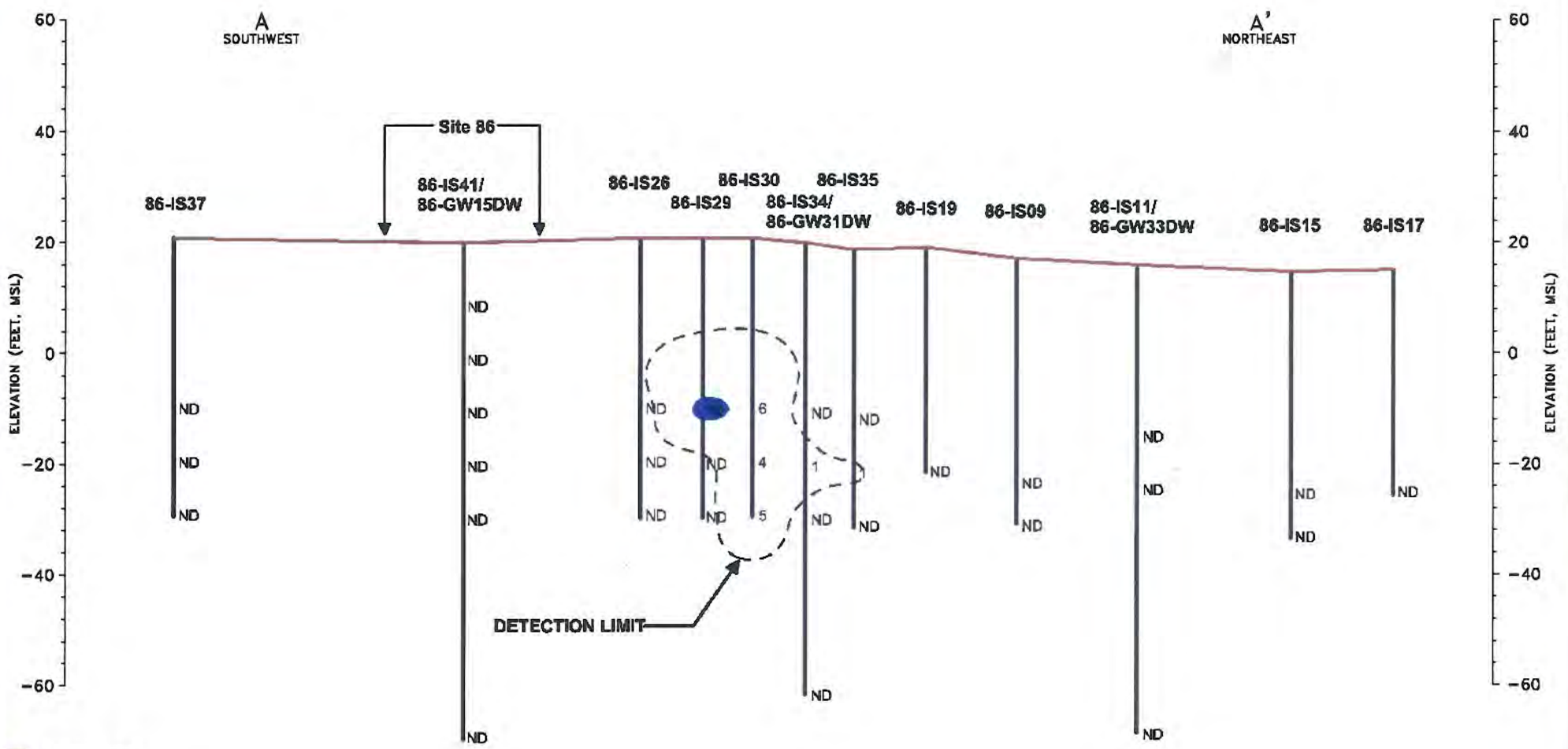
LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

SOURCE: MCB CAMP LEJEUNE, 2000.

FIGURE 4-8
EXTENT OF BENZENE ABOVE THE 2L STANDARD (50 TO 54 FEET BGS)
OPERABLE UNIT No. 20 – SITE 86
AMENDED RI REPORT
CTO – 0191

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



- >1,000 ug/L
- 500 ug/L
- 400 ug/L
- 300 ug/L
- 200 ug/L
- 100 ug/L
- 50 ug/L
- 25 ug/L
- 10 ug/L

200 0 100 200 400

Horizontal Scale: 1 inch = 200 ft.

20 0 10 20 40

Vertical Scale: 1 inch = 20 ft.

THE SOIL BORING INFORMATION IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. SUBSURFACE CONDITIONS INTERPOLATED BETWEEN BORINGS ARE ESTIMATED BASED ON ACCEPTED SOIL ENGINEERING PRINCIPLES AND GEOLOGIC JUDGEMENT.

LEGEND

CONCENTRATIONS EXPRESSED IN ug/L

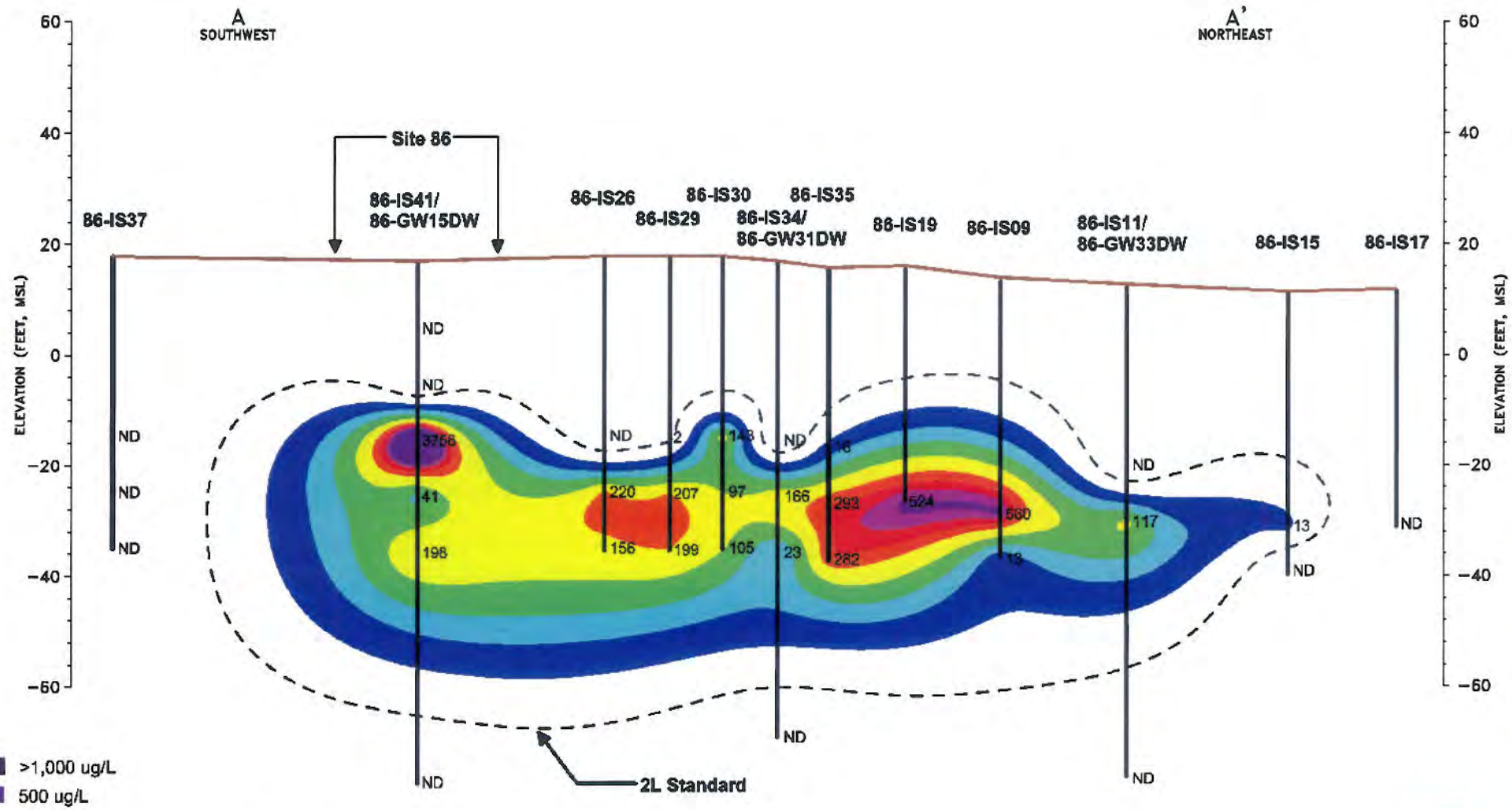
ND – COMPOUND NOT DETECTED

NS – INTERVAL NOT SAMPLED

Baker

Baker Environmental, Inc.

FIGURE 4-10
PCE CROSS SECTION OF THE EXTENT OF PCE ABOVE DETECTION LIMITS
OPERABLE UNIT NO. 20 – SITE 86
AMENDED RI REPORT, CTO – 0191
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



>1,000 ug/L
500 ug/L
400 ug/L
300 ug/L
200 ug/L
100 ug/L
50 ug/L
25 ug/L
10 ug/L

200 0 100 200 400
Horizontal Scale: 1 inch = 200 ft.

20 0 10 20 40
Vertical Scale: 1 inch = 20 ft.

THE SOIL BORING INFORMATION IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. SUBSURFACE CONDITIONS INTERPOLATED BETWEEN BORINGS ARE ESTIMATED BASED ON ACCEPTED SOIL ENGINEERING PRINCIPLES AND GEOLOGIC JUDGEMENT.

LEGEND

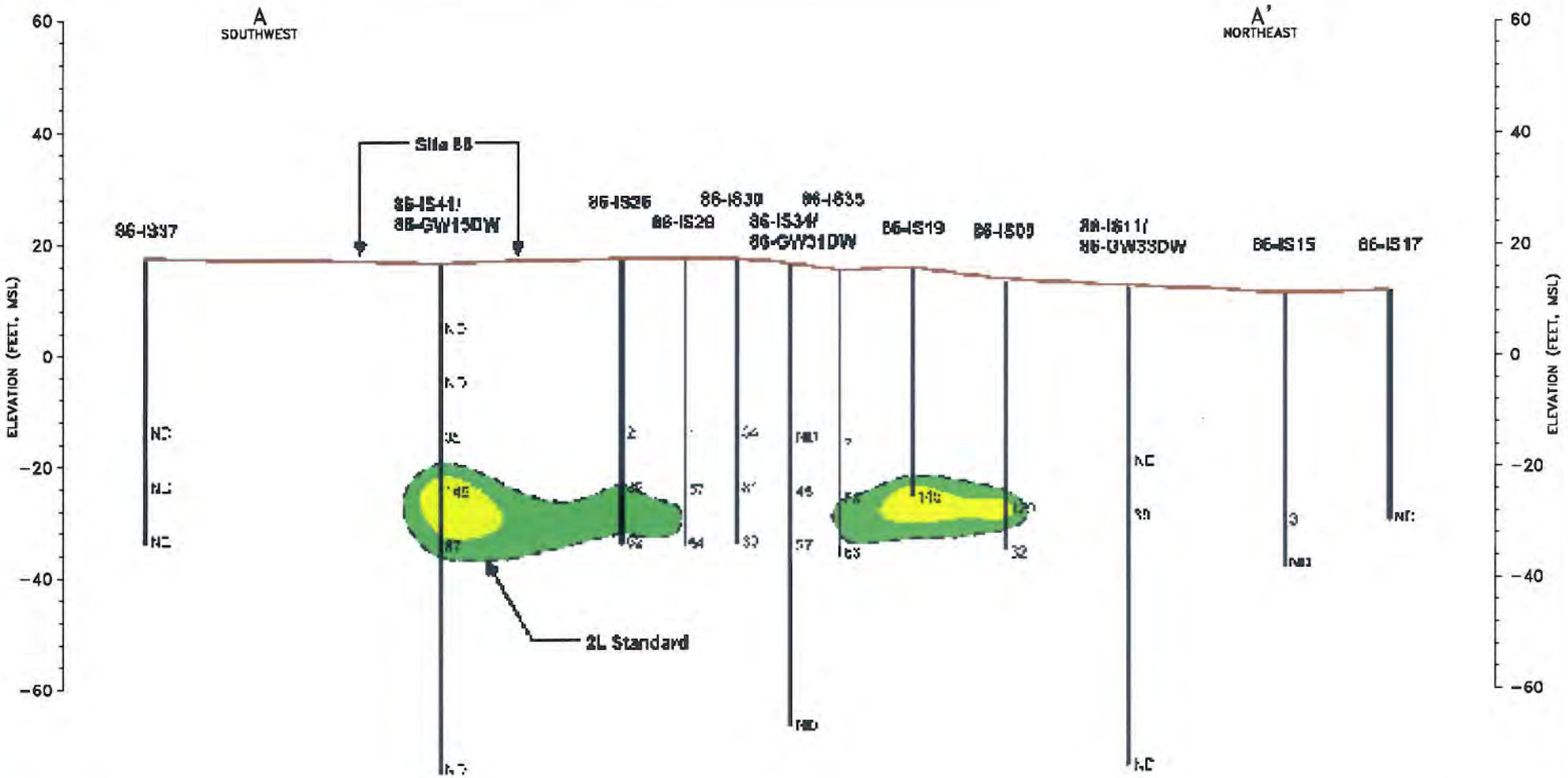
CONCENTRATIONS EXPRESSED IN ug/L

ND - COMPOUND NOT DETECTED

NS - INTERVAL NOT SAMPLED

Baker
Baker Environmental, Inc.

FIGURE 4-11
CROSS SECTION OF THE EXTENT OF TCE ABOVE THE 2L STANDARD
OPERABLE UNIT NO. 20 - SITE 86
AMENDED RI REPORT, CTO - 0191
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



>1,000 ug/L
500 ug/L
400 ug/L
300 ug/L
200 ug/L
100 ug/L
70 ug/L

Horizontal Scale: 1 inch = 200 ft.

Vertical Scale: 1 inch = 20 ft.

THE SOIL BORING INFORMATION IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. SUBSURFACE CONDITIONS INTERPOLATED BETWEEN BORINGS ARE ESTIMATED BASED ON ACCEPTED SOIL ENGINEERING PRINCIPLES AND GEOLOGIC JUDGEMENT.

LEGEND

CONCENTRATIONS EXPRESSED IN ug/L

ND – COMPOUND NOT DETECTED

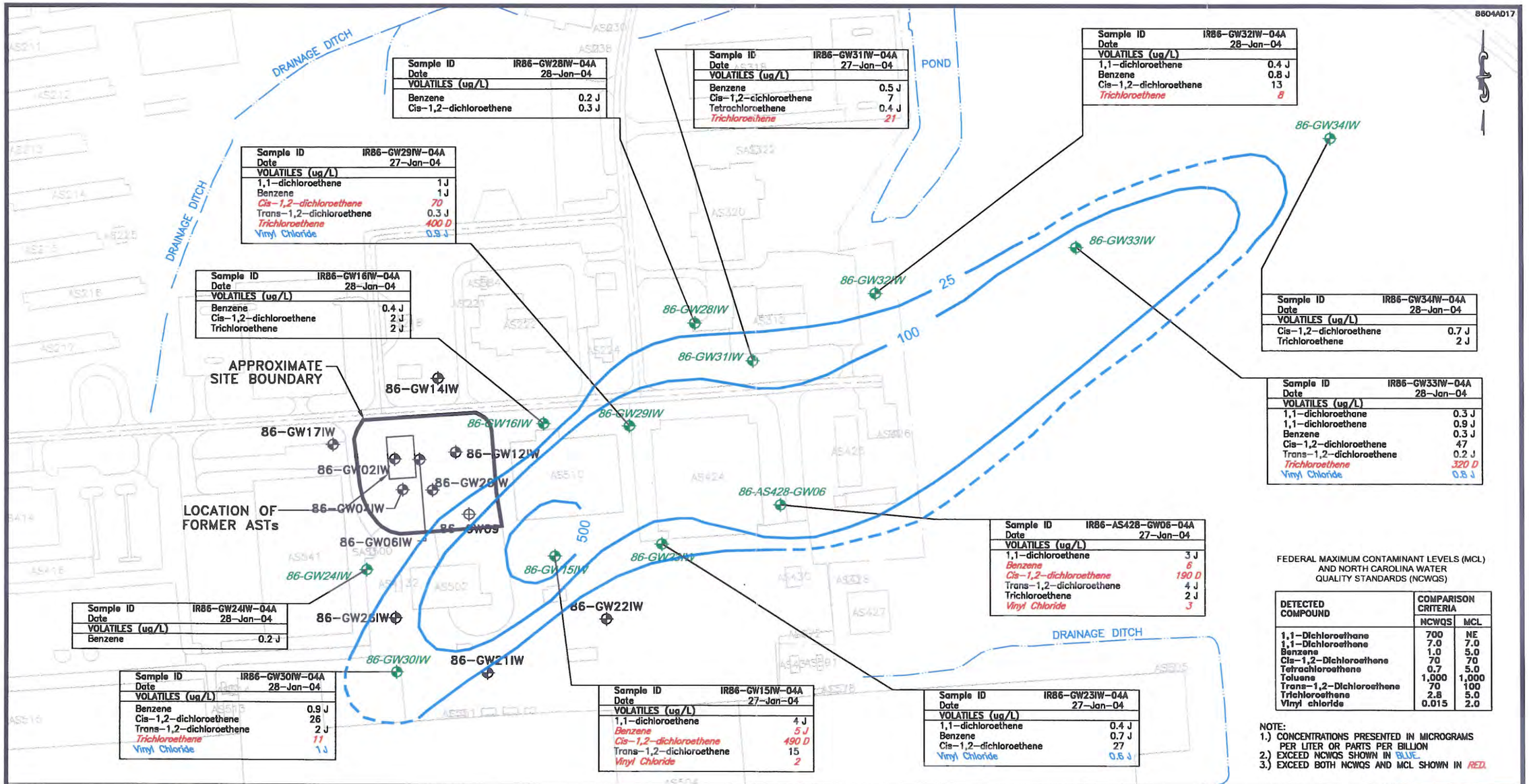
NS – INTERVAL NOT SAMPLED

Baker
Baker Environmental, Inc.

FIGURE 4-12
DCE CROSS SECTION
OPERABLE UNIT NO. 20 – SITE 86
AMENDED RI REPORT, CTO – 0191
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Annual Monitoring Report (Engineering and Environment, Inc. and Baker, 2004)

8804AD17



Sample ID	IR86-GW28IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
Benzene	0.2 J
Cis-1,2-dichloroethene	0.3 J

Sample ID	IR86-GW31IW-04A
Date	27-Jan-04
VOLATILES (ug/L)	
Benzene	0.5 J
Cis-1,2-cichloroethene	7
Tetrachloroethene	0.4 J
Trichloroethene	*21*

Sample ID	IR86-GW32IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethene	0.4 J
Benzene	0.8 J
Cis-1,2-dichloroethene	13
Trichloroethene	*8*

Sample ID	IR86-GW29IW-04A
Date	27-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethene	1 J
Benzene	1 J
Cis-1,2-dichloroethene	*70*
Trans-1,2-dichloroethene	0.3 J
Trichloroethene	*400 D*
Vinyl Chloride	0.9 J

Sample ID	IR86-GW16IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
Benzene	0.4 J
Cis-1,2-dichloroethene	2 J
Trichloroethene	2 J

Sample ID	IR86-GW34IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
Cis-1,2-dichloroethene	0.7 J
Trichloroethene	2 J

Sample ID	IR86-GW33IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethane	0.3 J
1,1-dichloroethene	0.9 J
Benzene	0.3 J
Cis-1,2-dichloroethene	47
Trans-1,2-dichloroethene	0.2 J
Trichloroethene	*320 D*
Vinyl Chloride	0.8 J

Sample ID	IR86-AS428-GW06-04A
Date	27-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethene	3 J
Benzene	*6*
Cis-1,2-dichloroethene	*190 D*
Trans-1,2-dichloroethene	4 J
Trichloroethene	2 J
Vinyl Chloride	*3*

Sample ID	IR86-GW24IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
Benzene	0.2 J

Sample ID	IR86-GW30IW-04A
Date	28-Jan-04
VOLATILES (ug/L)	
Benzene	0.9 J
Cis-1,2-dichloroethene	26
Trans-1,2-dichloroethene	2 J
Trichloroethene	*11*
Vinyl Chloride	1 J

Sample ID	IR86-GW15IW-04A
Date	27-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethene	4 J
Benzene	*5 J*
Cis-1,2-dichloroethene	*490 D*
Trans-1,2-dichloroethene	15
Vinyl Chloride	*2*

Sample ID	IR86-GW23IW-04A
Date	27-Jan-04
VOLATILES (ug/L)	
1,1-dichloroethene	0.4 J
Benzene	0.7 J
Cis-1,2-dichloroethene	27
Vinyl Chloride	0.6 J

FEDERAL MAXIMUM CONTAMINANT LEVELS (MCL) AND NORTH CAROLINA WATER QUALITY STANDARDS (NCWQS)

DETECTED COMPOUND	COMPARISON CRITERIA	
	NCWQS	MCL
1,1-Dichloroethane	700	NE
1,1-Dichloroethene	7.0	7.0
Benzene	1.0	5.0
Cis-1,2-Dichloroethene	70	70
Tetrachloroethene	0.7	5.0
Toluene	1,000	1,000
Trans-1,2-Dichloroethene	70	100
Trichloroethene	2.8	5.0
Vinyl chloride	0.015	2.0

NOTE:
1.) CONCENTRATIONS PRESENTED IN MICROGRAMS PER LITER OR PARTS PER BILLION
2.) EXCEED NCWQS SHOWN IN BLUE.
3.) EXCEED BOTH NCWQS AND MCL SHOWN IN *RED*.

200 0 100 200
1 inch = 200 ft.

Baker
Baker Environmental, Inc.

NOTE:
-WELLS SHOWN IN REGULAR FONT ARE NOT INCLUDED IN THE MONITORING PROGRAM.

SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

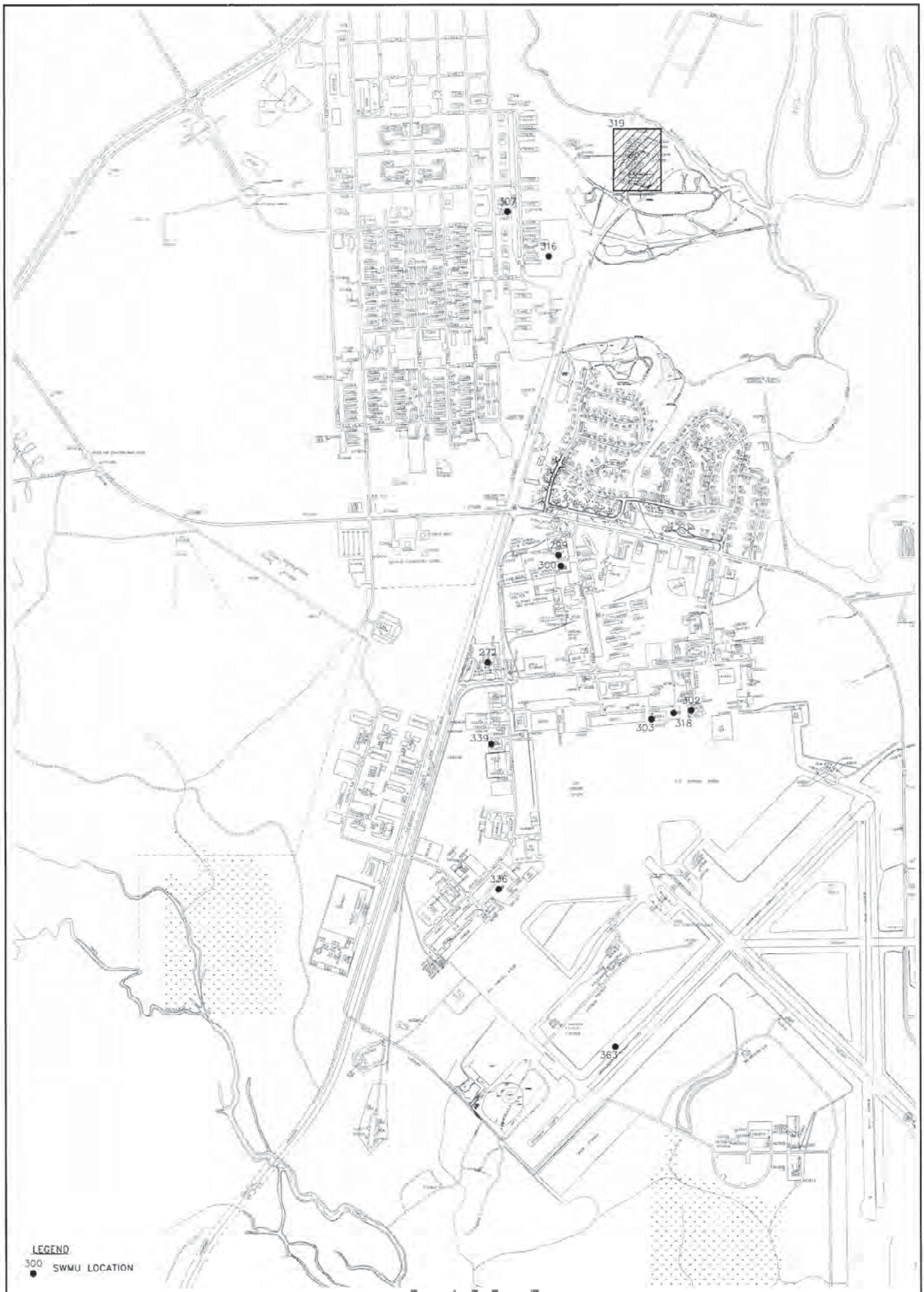
86-GW02IW – INTERMEDIATE MONITORING WELL

– ISOCONCENTRATION CONTOUR (TOTAL VOCs)

– ESTIMATED ISOCONCENTRATION CONTOUR

FIGURE 17
VOCs IN GROUNDWATER
UPPER CASTLE HAYNE AQUIFER – JANUARY 2004
OPERABLE UNIT NO. 20 – SITE 86
MONITORING AND O&M SUPPORT, CTO – 0004
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Phase II Confirmatory Sampling Report (Baker 2005)



MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

BAKER ENVIRONMENTAL, Inc.
Moon Township, Pennsylvania

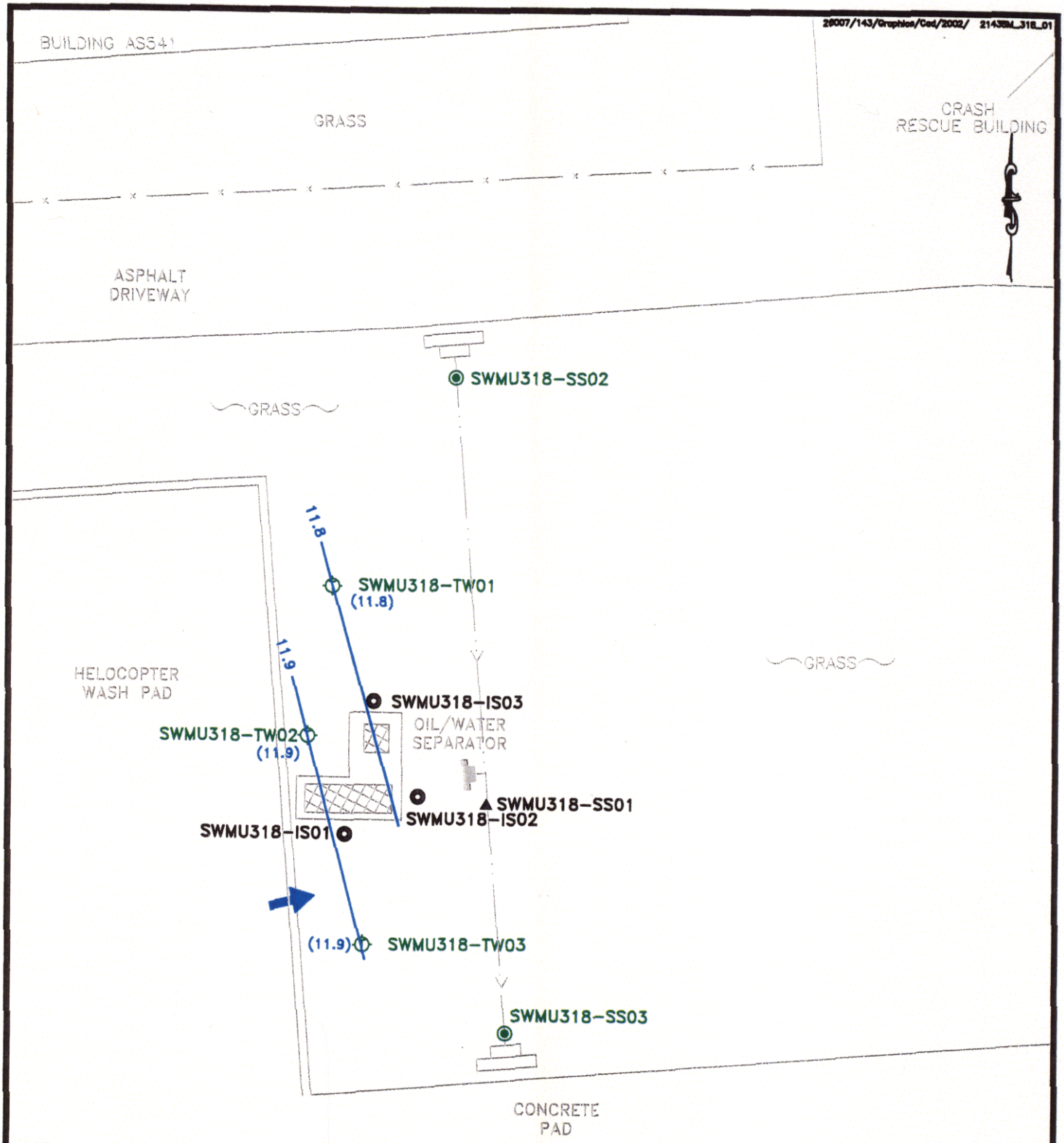
Baker

CAMP GEIGER/MCAS AREA
PHASE II SWMU LOCATION MAP

SCALE 1"= 500' DATE June 7, 2005

1-2

03753EBaX



NOTE:
Phase I sample locations were not surveyed, locations are approximate.

25 0 12.5 25
1 inch = 25 ft.

Baker

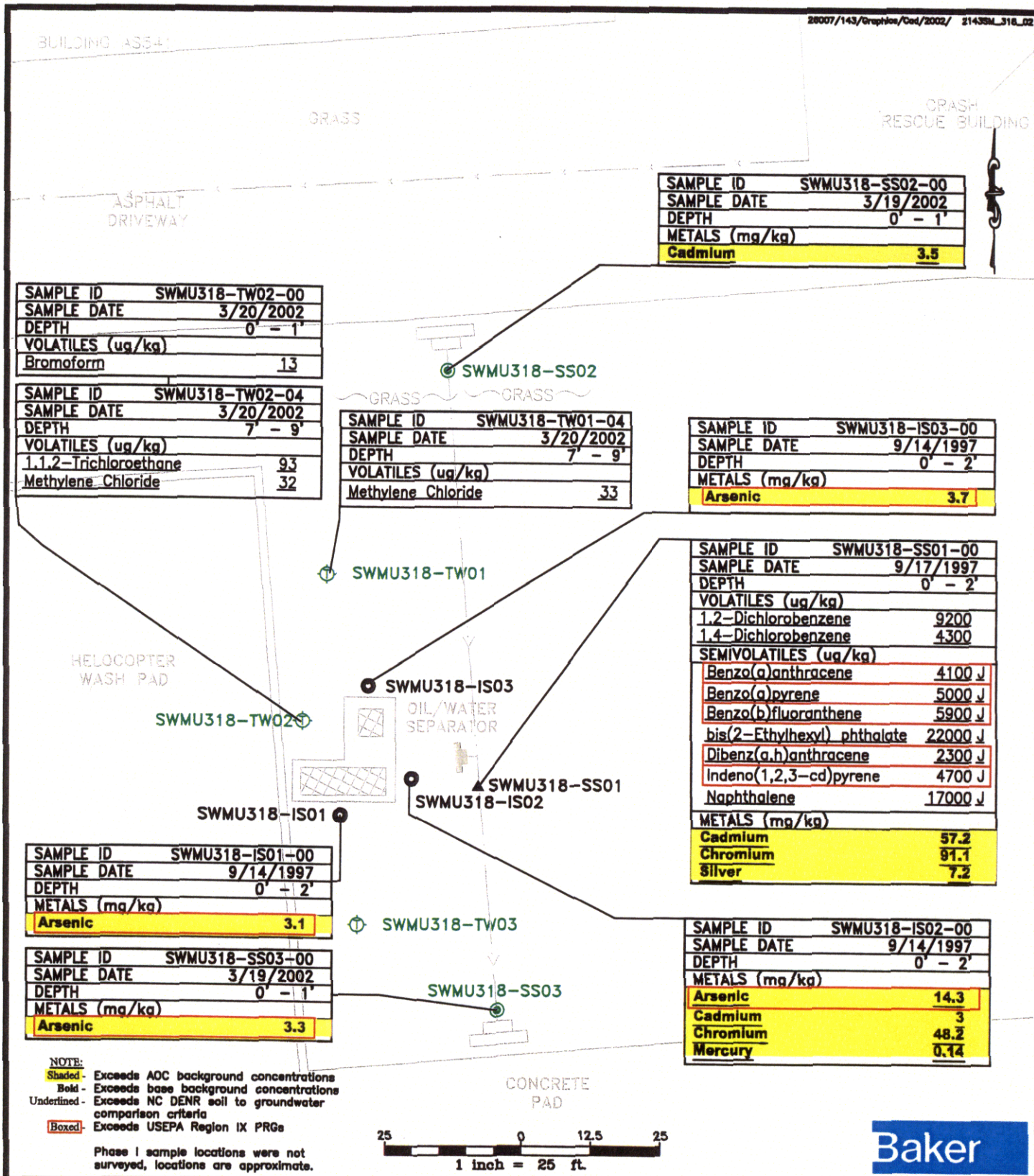
LEGEND

- TEMPORARY WELL
- SOIL BORING PHASE II SURFACE SOIL
- PHASE I SURFACE SOIL
- PHASE I SOIL BORING
- GROUNDWATER FLOW DIRECTION
- 11.8 — GROUNDWATER CONTOUR
- INDICATES DRAWING DITCH AND FLOW DIRECTION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 1
PHASE II CONFIRMATORY SAMPLING INVESTIGATION
SWMU 318
CTO-143
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

03753EB36Y

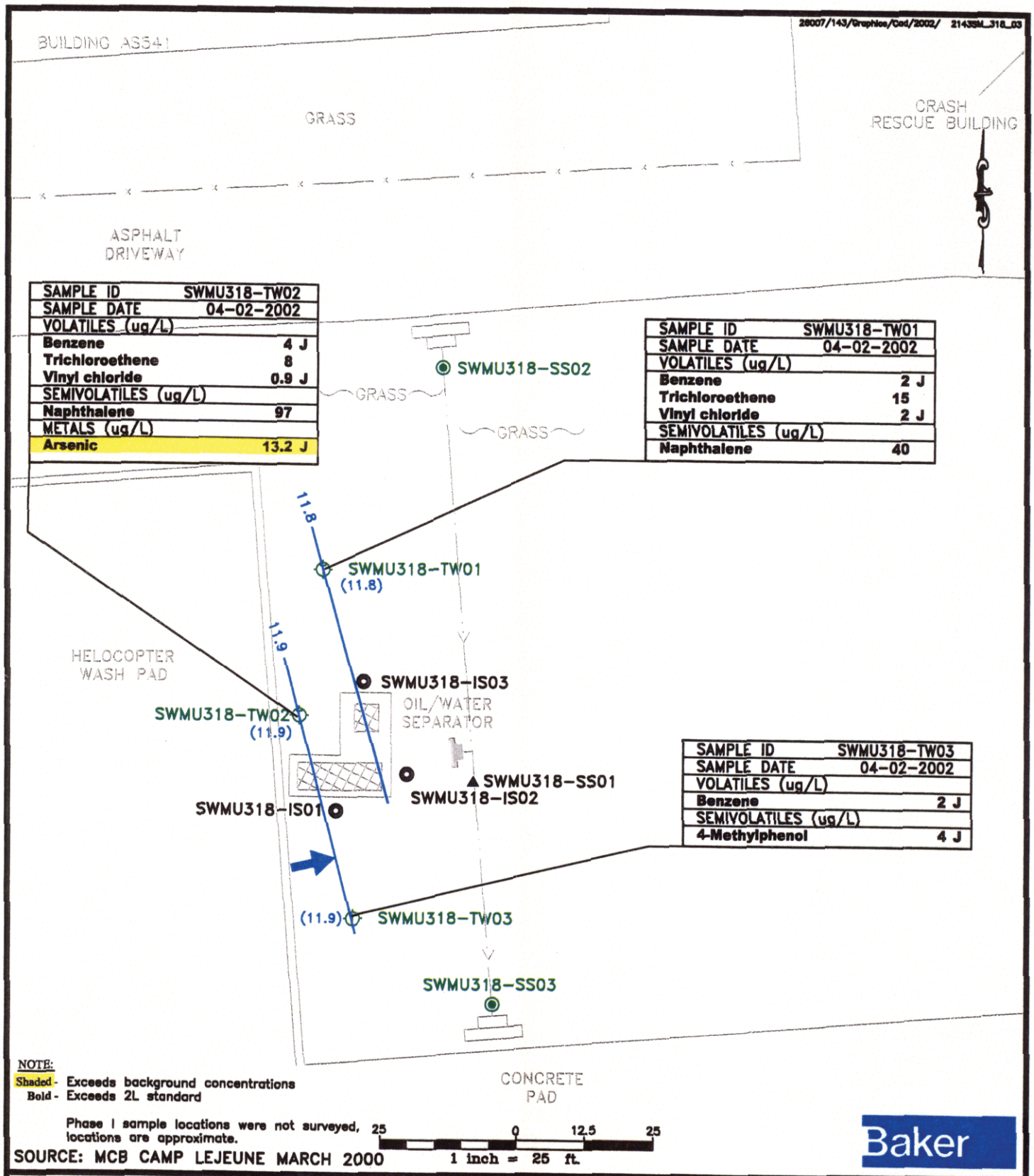


LEGEND

- TEMPORARY WELL
- SOIL BORING PHASE II SURFACE SOIL
- PHASE I SURFACE SOIL
- PHASE I SOIL BORING
- INDICATES DRAWING DITCH AND FLOW DIRECTION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 2
PHASE II CONFIRMATORY INVESTIGATION CONSTITUENTS EXCEEDING SCREENING CRITERIA IN SOIL
SWMU 318
CTO-143
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

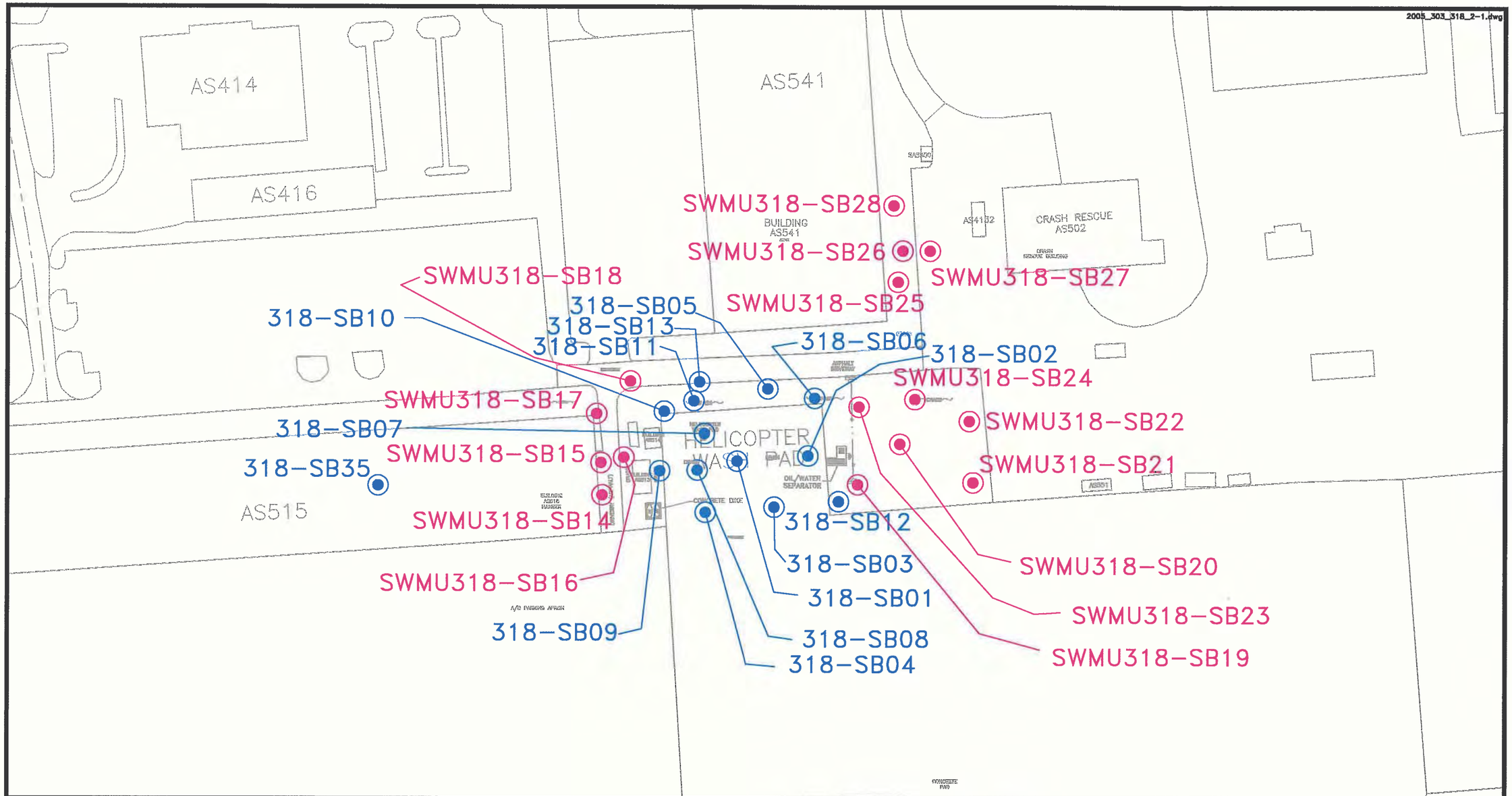


LEGEND

- TEMPORARY WELL
- SOIL BORING PHASE II SURFACE SOIL
- PHASE I SURFACE SOIL
- PHASE I SOIL BORING
- GROUNDWATER FLOW DIRECTION
- 11.8 — GROUNDWATER CONTOUR
- INDICATES DRAWING DITCH AND FLOW DIRECTION

FIGURE 3
PHASE II CONFIRMATORY INVESTIGATION CONSTITUENTS EXCEEDING SCREENING CRITERIA IN GROUNDWATER
SWMU 318
CTO-143
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SWMU 303/318 RCRA Facilities Investigation (CH2M HILL Hill, 2006)



Baker

SOURCE: MCB CAMP LEJEUNE, 2000.

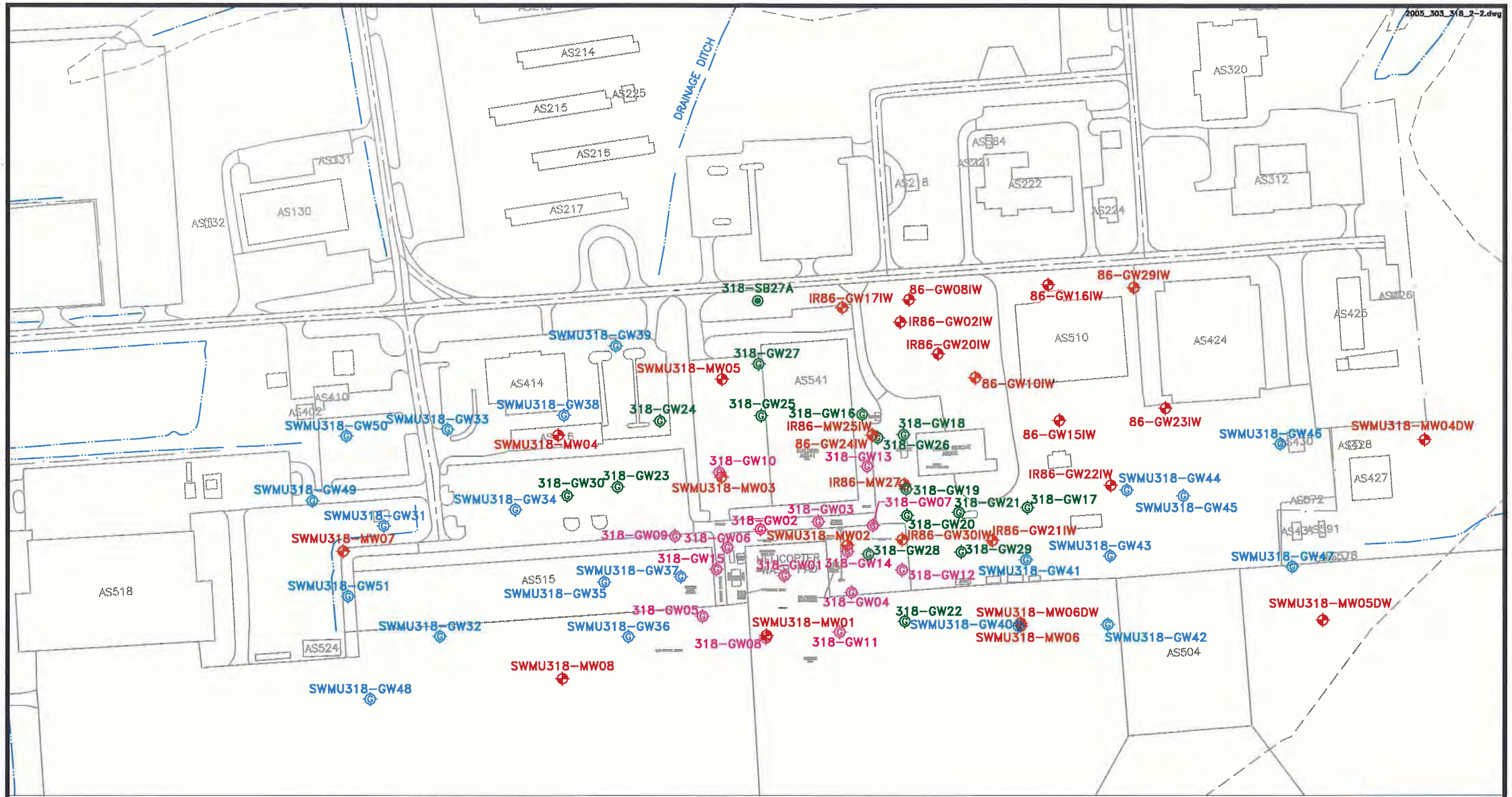
100 0 50 100
1 inch = 100 ft.

LEGEND

- PHASE I RFI SOIL BORING LOCATION
- PHASE III RFI SOIL BORING LOCATION

FIGURE 2-1
SOIL BORING LOCATION MAP
RCRA FACILITY INVESTIGATION
SWMU 303/318, CTO-0091

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



Baker
Michael Baker Jr. Inc.

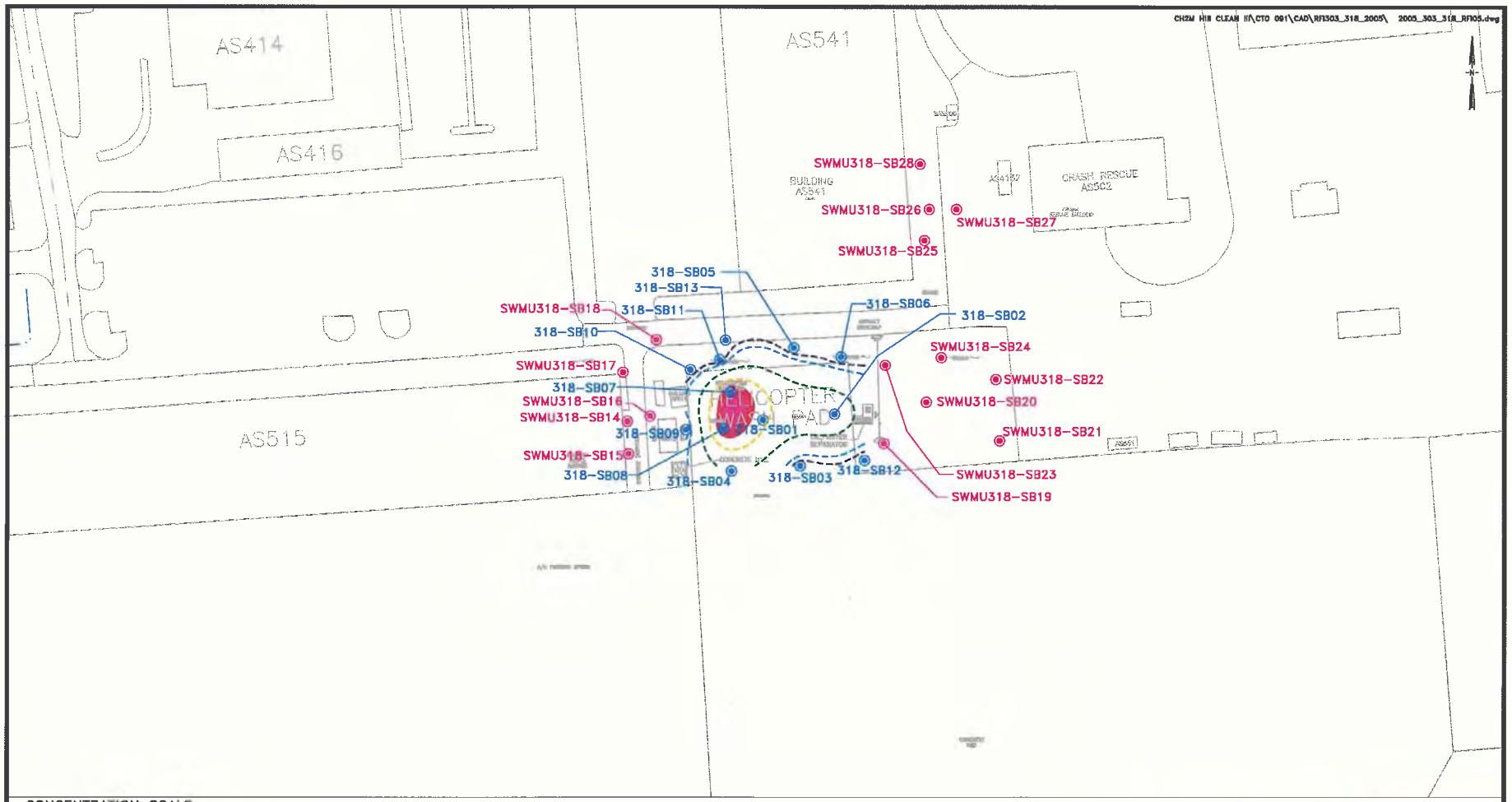
200 0 100 200
1 inch = 200 ft.

SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

FIGURE 2-2
GROUNDWATER GRAB AND MONITORING WELL LOCATION MAP
RCRA FACILITY INVESTIGATION
SWMU 303/318, CTO-0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



CONCENTRATION SCALE

- 10,000 ppb
- 4,310 ppb (NC Soil-to-Groundwater)
- 1,000 ppb
- 100 ppb
- 10 ppb
- 5.4 ppb (Detection Limit)

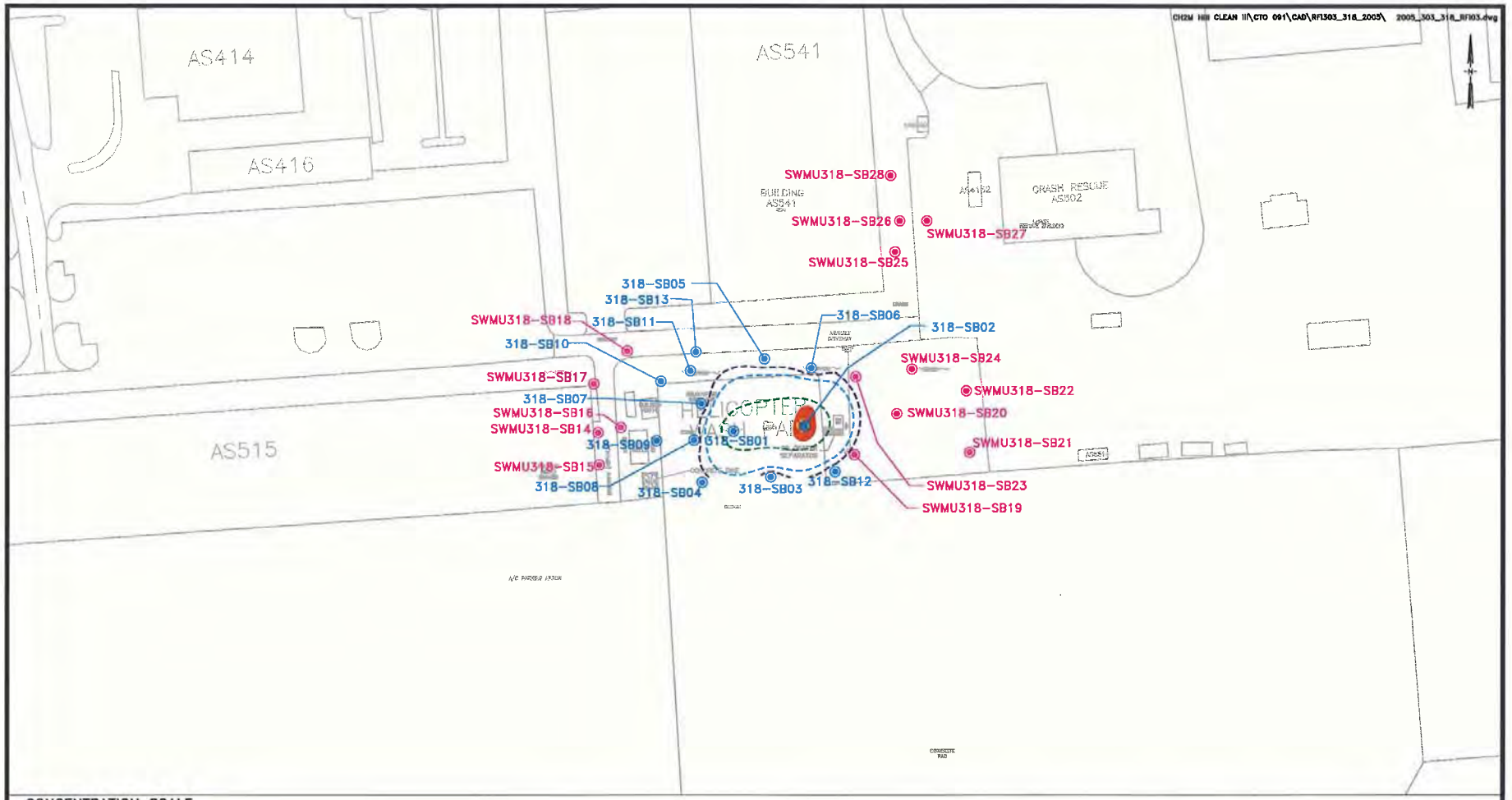
SOURCE: MCB CAMP LEJEUNE, 2000.

LEGEND

- PHASE I RFI SOIL BORING LOCATION
- PHASE III RFI SOIL BORING LOCATION

FIGURE 4-1
BUTYLBENZENE CONCENTRATIONS
IN SURFACE SOIL (0'-1')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Baker



CONCENTRATION SCALE

- 10,000 ppb
- 1,680 ppb (NC Soil-to-Groundwater)
- 1,000 ppb
- 100 ppb
- 10 ppb
- 5.4 ppb (Detection Limit)

SOURCE: MCB CAMP LEJEUNE, 2000.

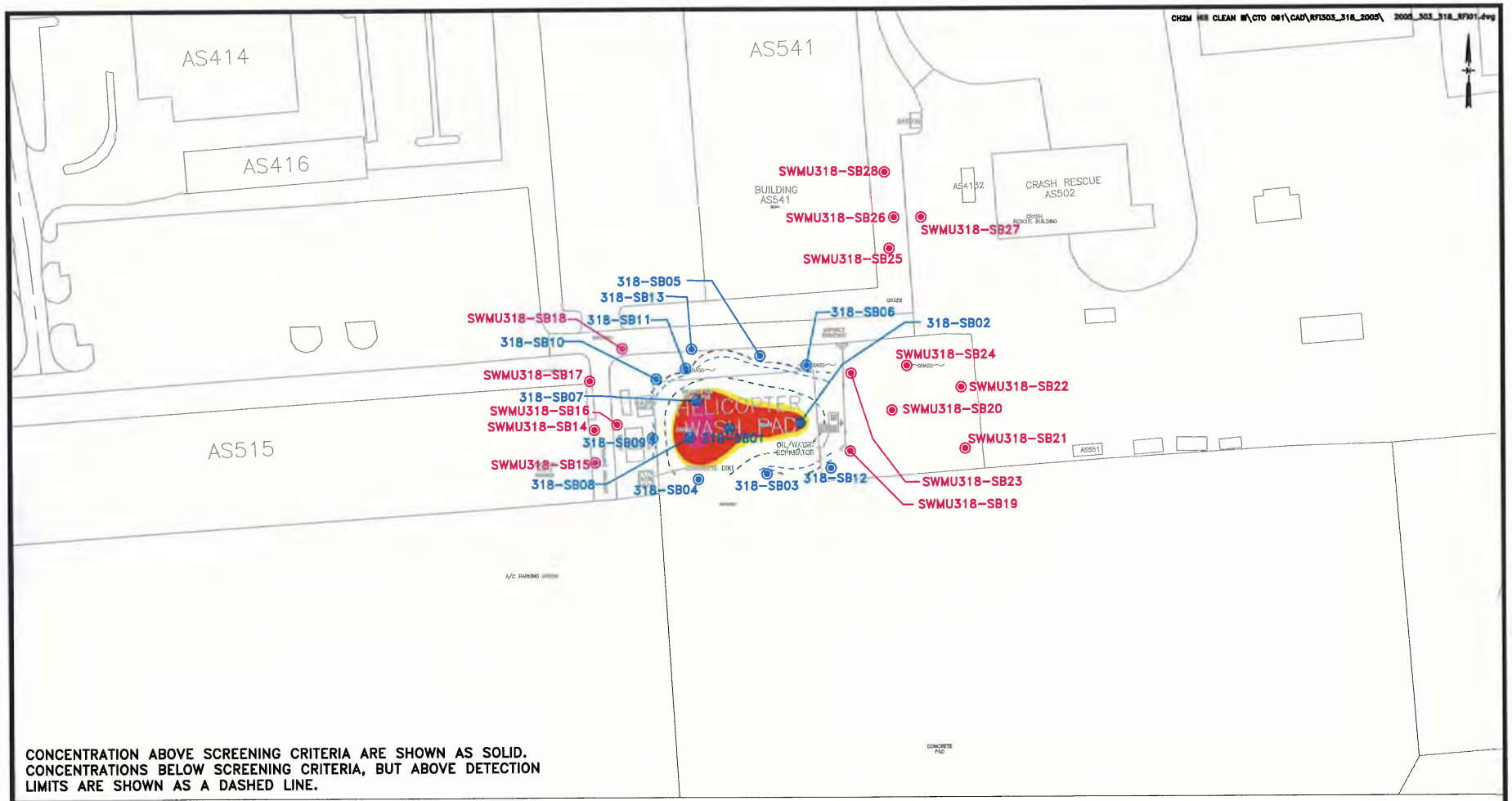
100 0 50 100
1 inch = 100 ft.

Baker

LEGEND

- PHASE I RFI SOIL BORING LOCATION
- PHASE III RFI SOIL BORING LOCATION

FIGURE 4-2
ISOPROPYLBENZENE CONCENTRATIONS
IN SURFACE SOIL (0'-1')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 10,000 ppb
- 1,000 ppb
- 585 ppb (NC Soil-to-Groundwater)
- 100 ppb
- 10 ppb
- 5.4 ppb (Detection Limit)

SOURCE: MCB CAMP LEJEUNE, 2000.

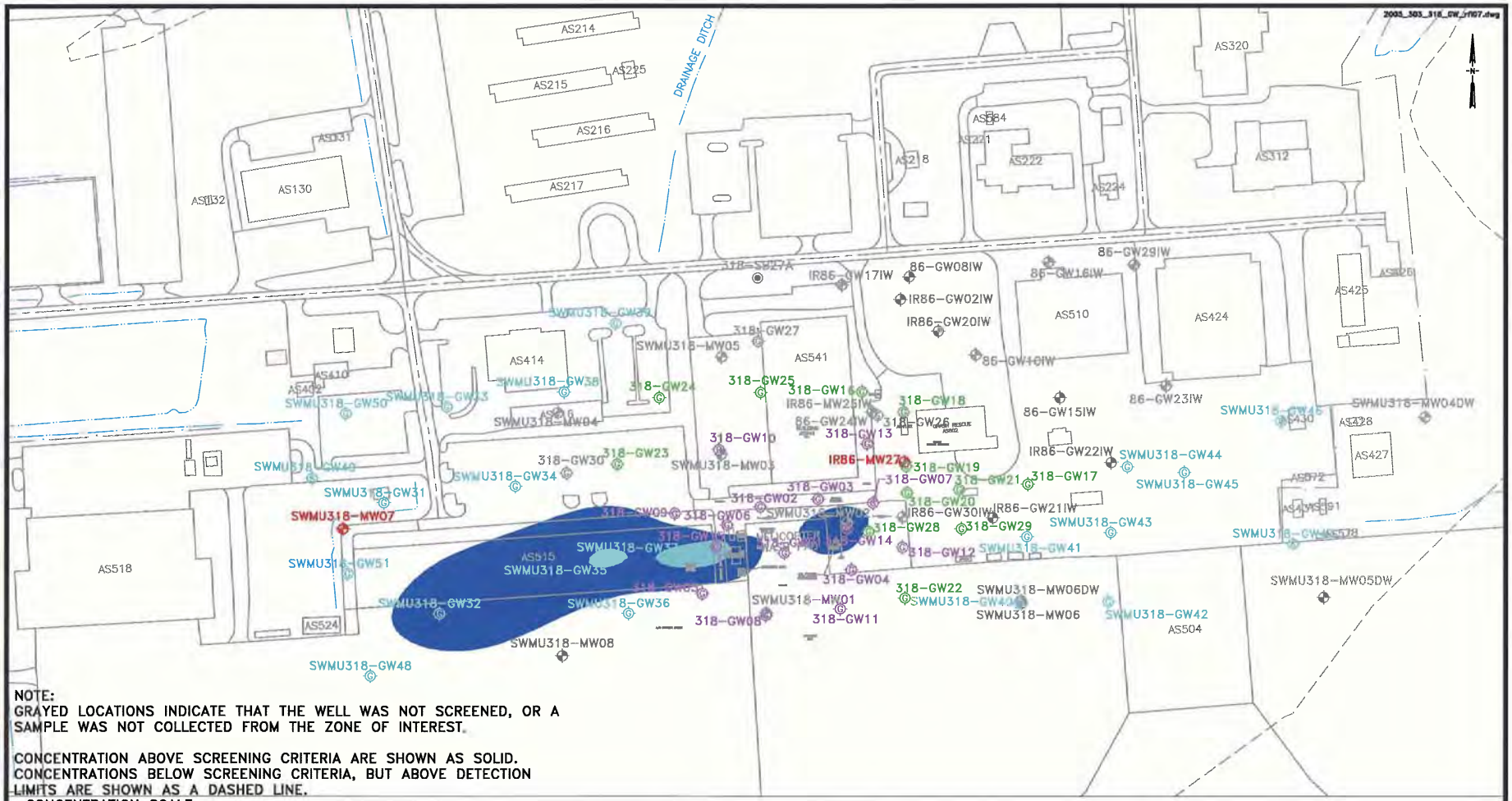
100 0 50 100
1 inch = 100 ft.

Baker

LEGEND

- PHASE I RFI SOIL BORING LOCATION
- PHASE III RFI SOIL BORING LOCATION

FIGURE 4-3
NAPHTHALENE CONCENTRATIONS IN SURFACE SOIL (0-1')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

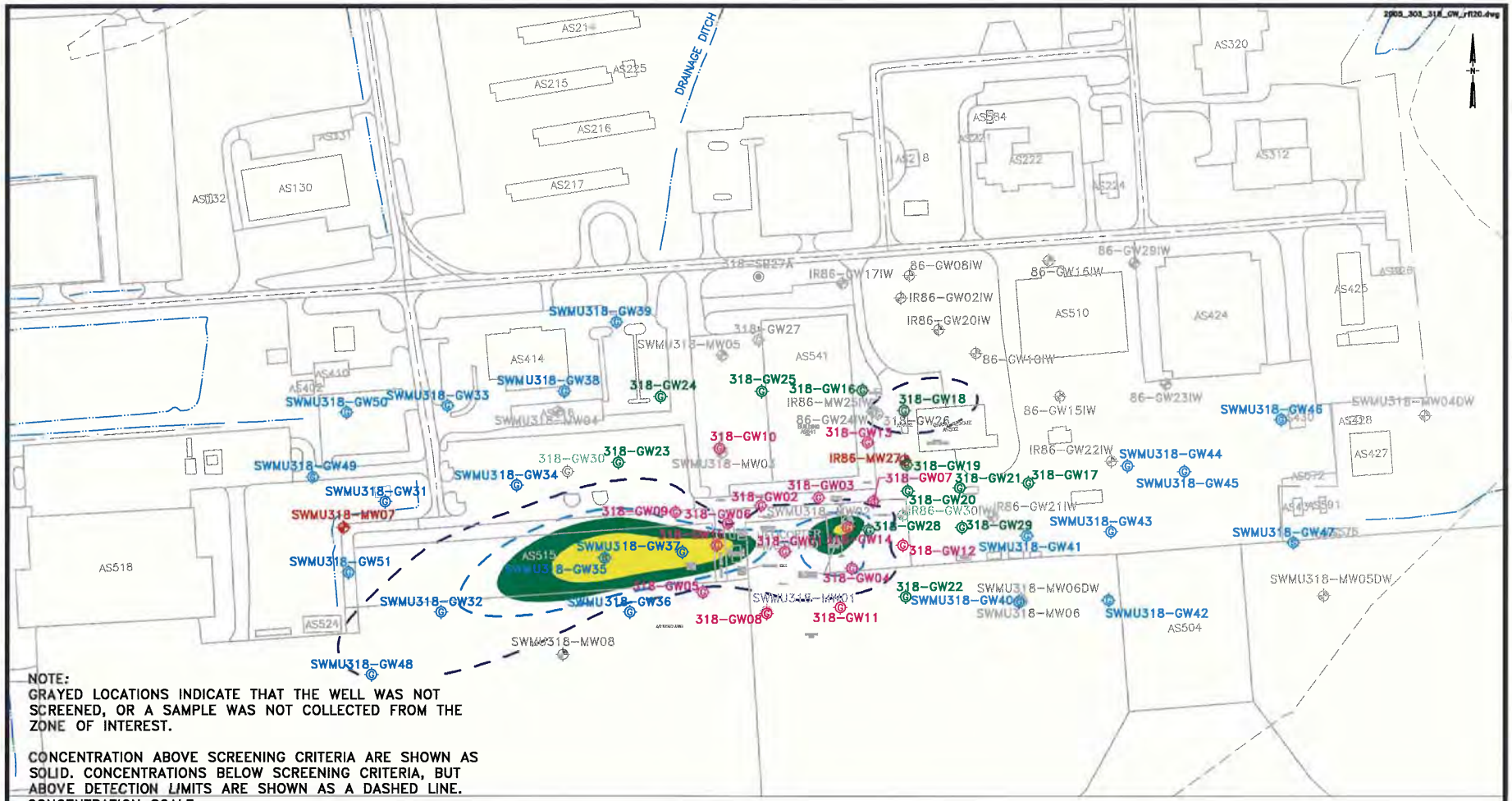
- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 10 ppb
- Detection Limit (2ppb)

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 4-6
BENZENE CONCENTRATIONS IN SHALLOW GROUNDWATER (10'-14')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 2L Standard (21 ppb)
- 10 ppb
- Detection Limit (2ppb)

200 0 100 200
1 inch = 200 ft.

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 4-7
NAPHTHALENE CONCENTRATIONS IN SHALLOW GROUNDWATER (10'-14')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

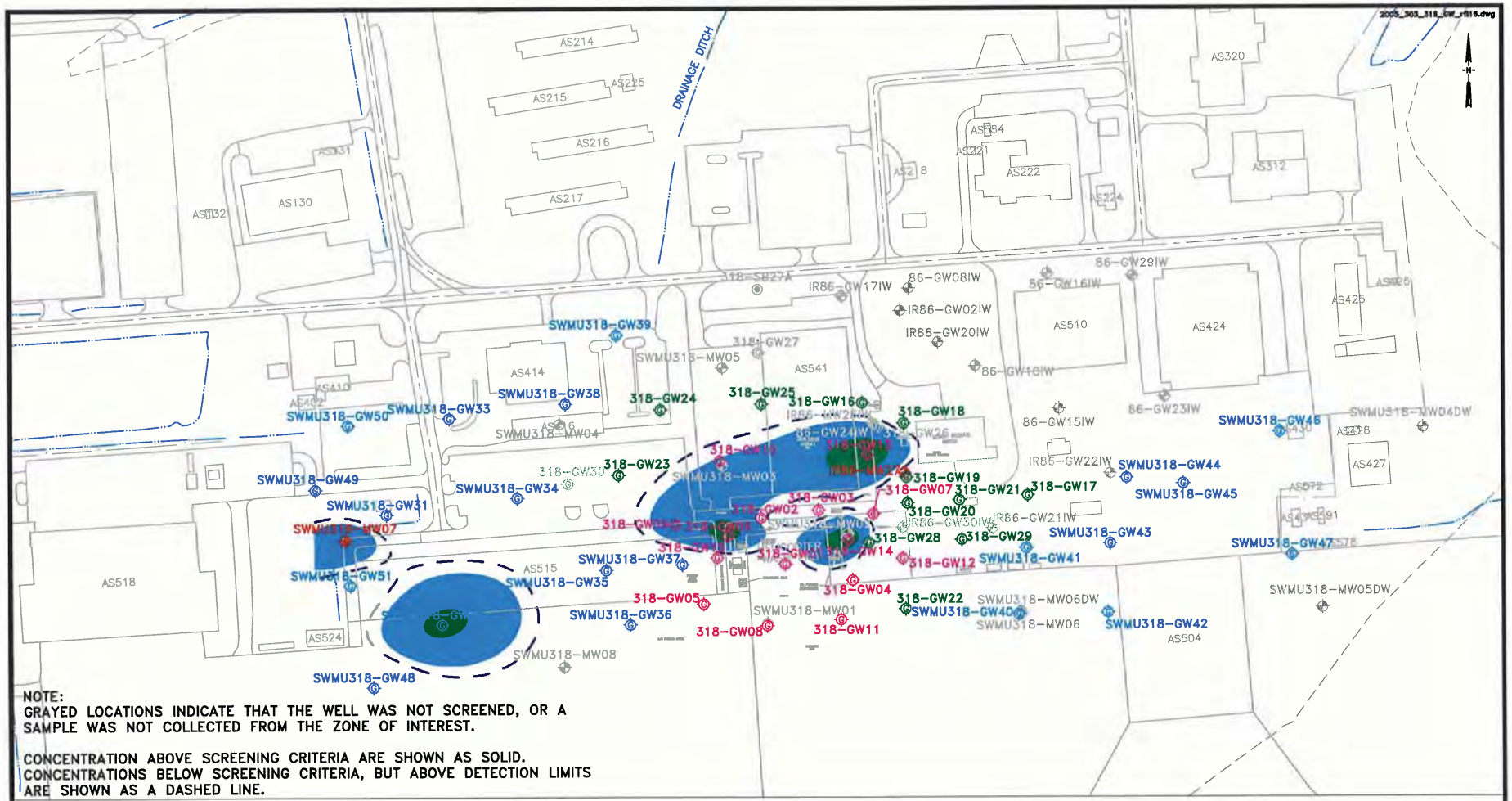
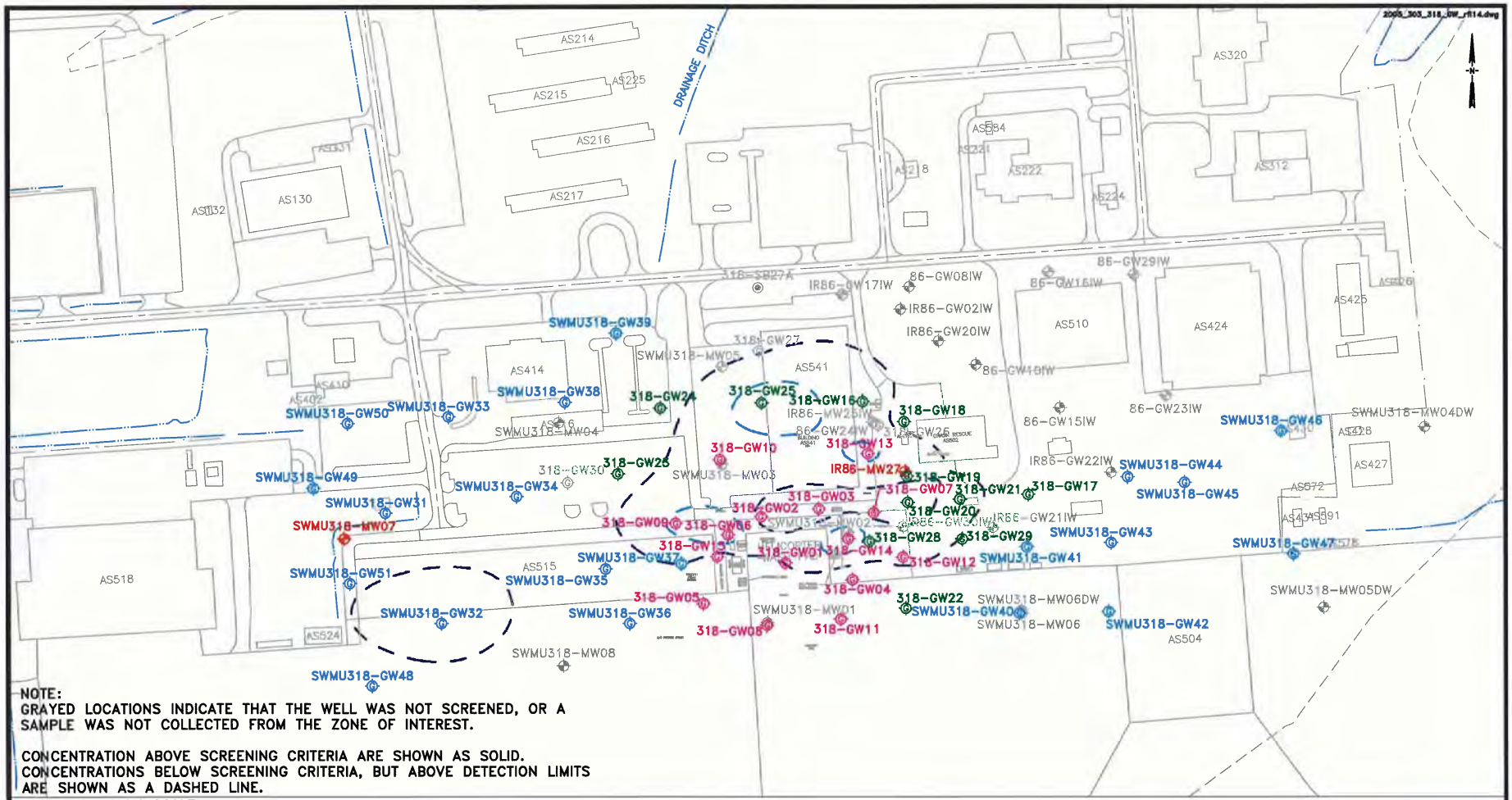


FIGURE 4-8
TCE CONCENTRATIONS IN SHALLOW GROUNDWATER (10'-14')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO – 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID.
CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 2L Standard (70 ppb)
- 10 ppb
- Detection Limit (2ppb)

200 0 100 200
1 inch = 200 ft.

Baker

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 4-9
CIS-DCE CONCENTRATIONS IN SHALLOW GROUNDWATER (10'-14')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

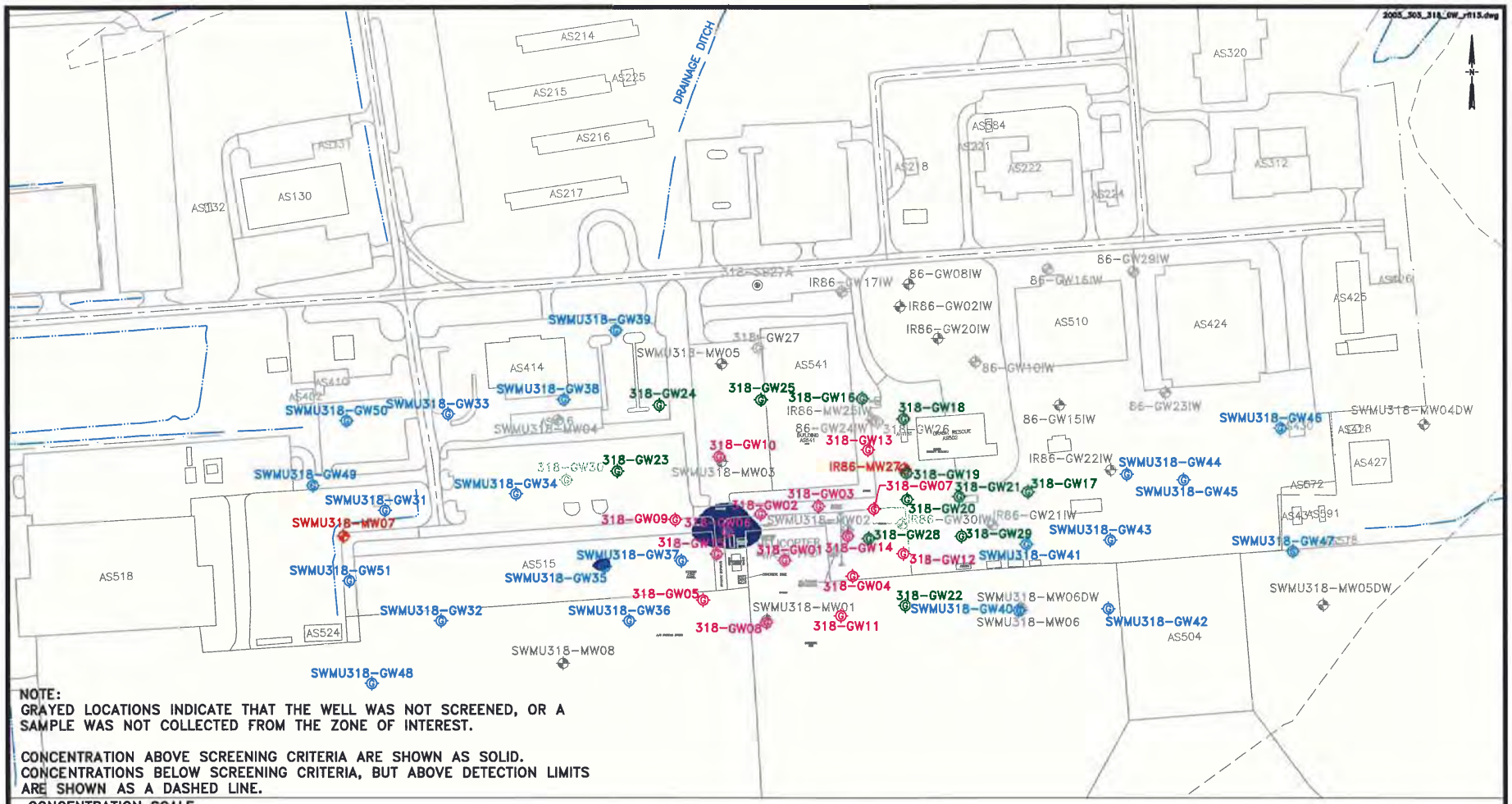
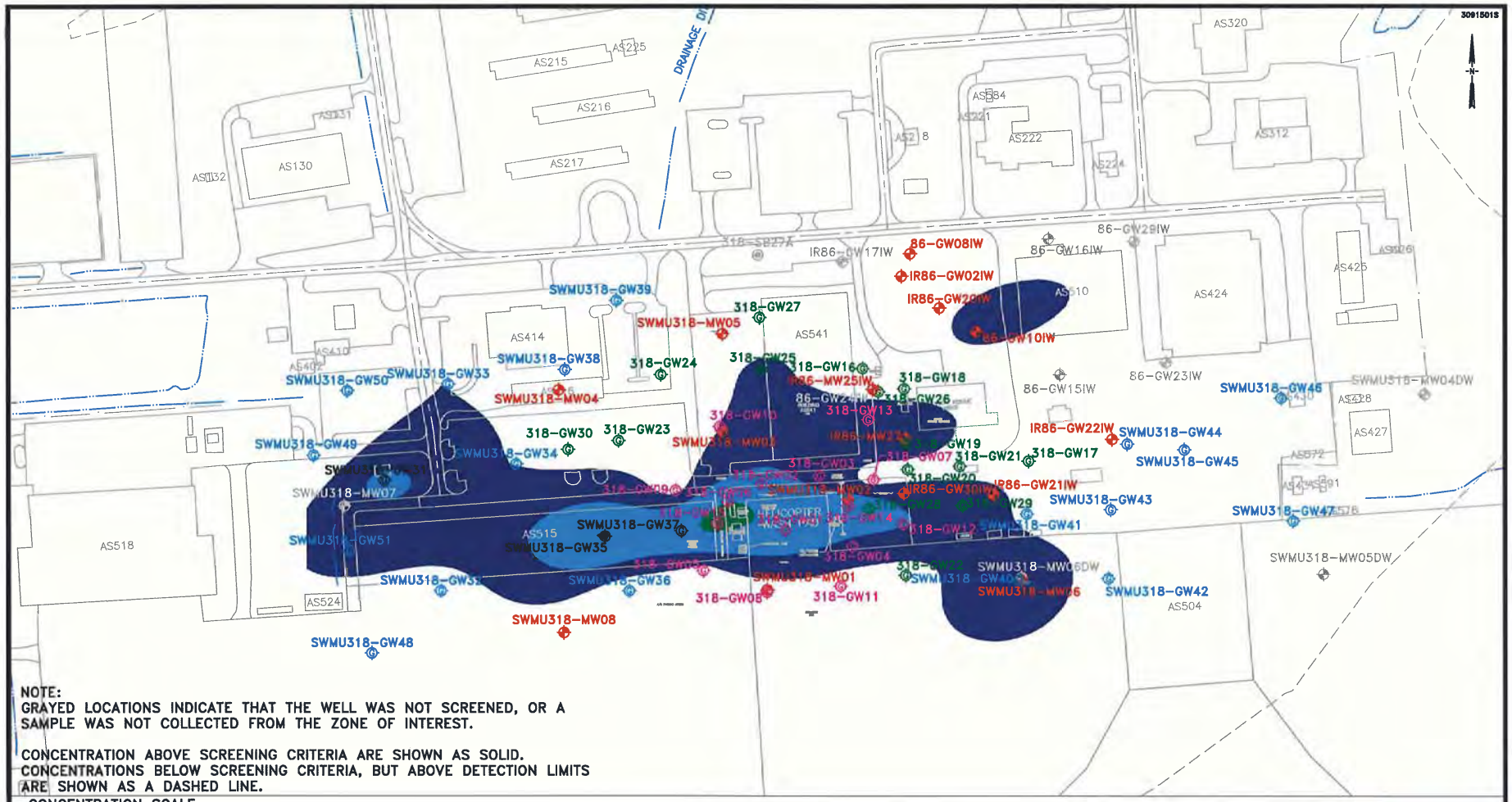


FIGURE 4-10
VINYL CHLORIDE CONCENTRATIONS IN SHALLOW GROUNDWATER (10'-14')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO – 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 10 ppb
- Detection Limit (2 ppb)

200 0 100 200
1 inch = 200 ft.

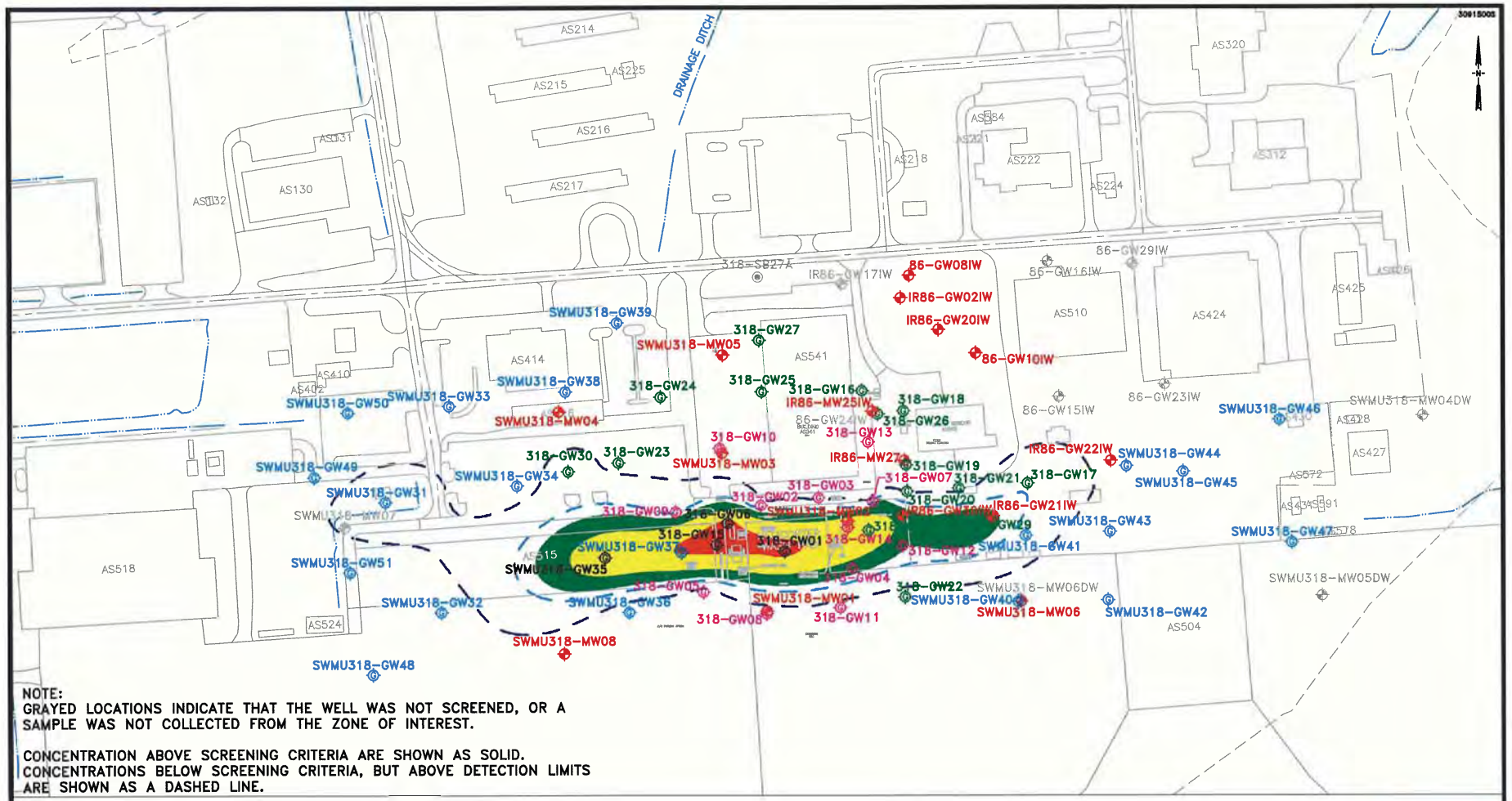
Baker

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

SOURCE: MCB, CAMP LEJEUNE, MARCH 2000.

FIGURE 4-11
BENZENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER (25'-34')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 2L Standard (21 ppb)
- 10 ppb
- Detection Limit (2 ppb)

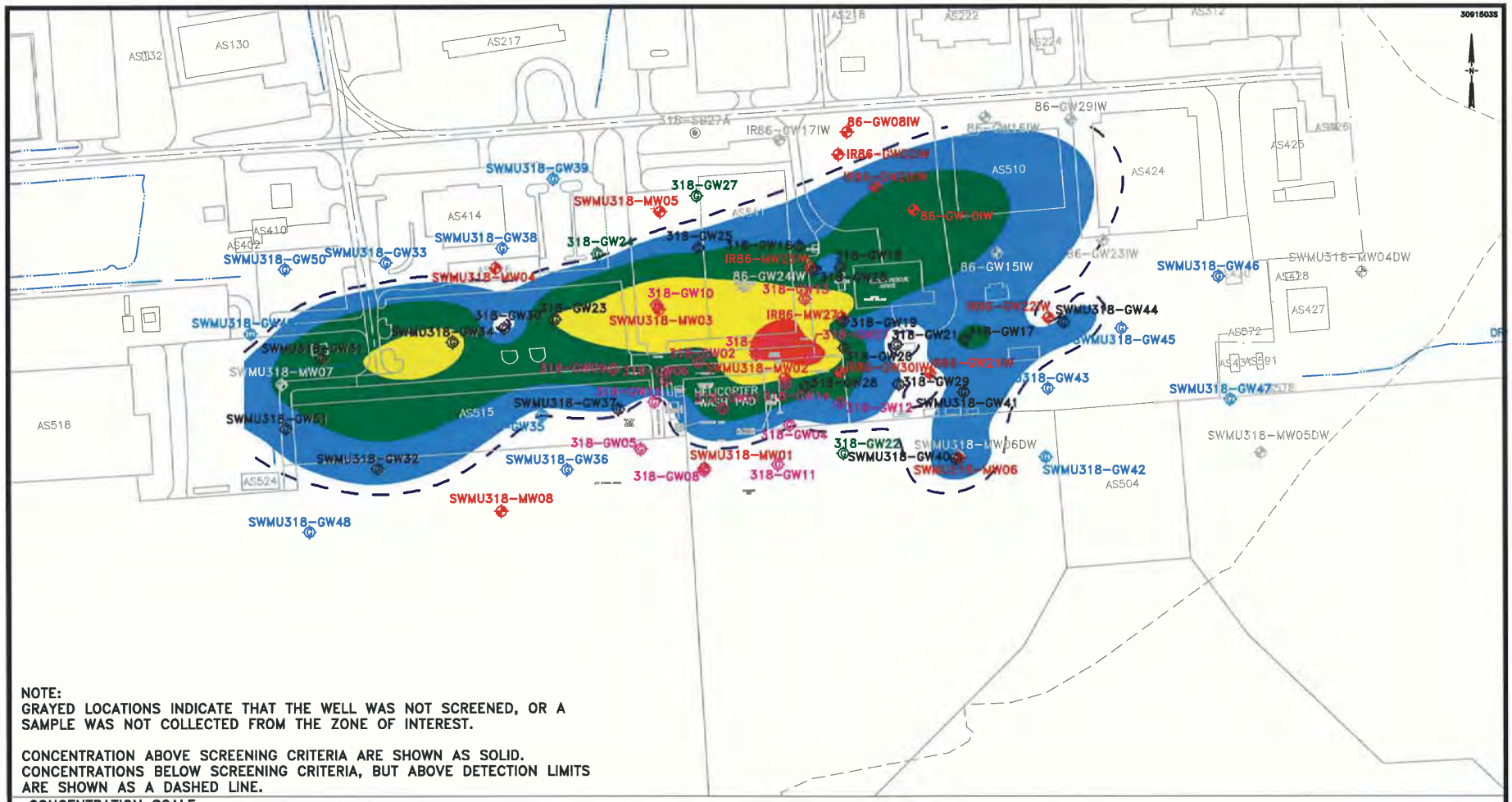
SOURCE: MCB, CAMP LEJEUNE, MARCH 2000.

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

Baker

FIGURE 4-12
NAPHTHALENE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER (25'-34')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 10 ppb
- 2L Standard (2.8 ppb)
- Detection Limit (2 ppb)

SOURCE: MCB, CAMP LEJEUNE, MARCH 2000.

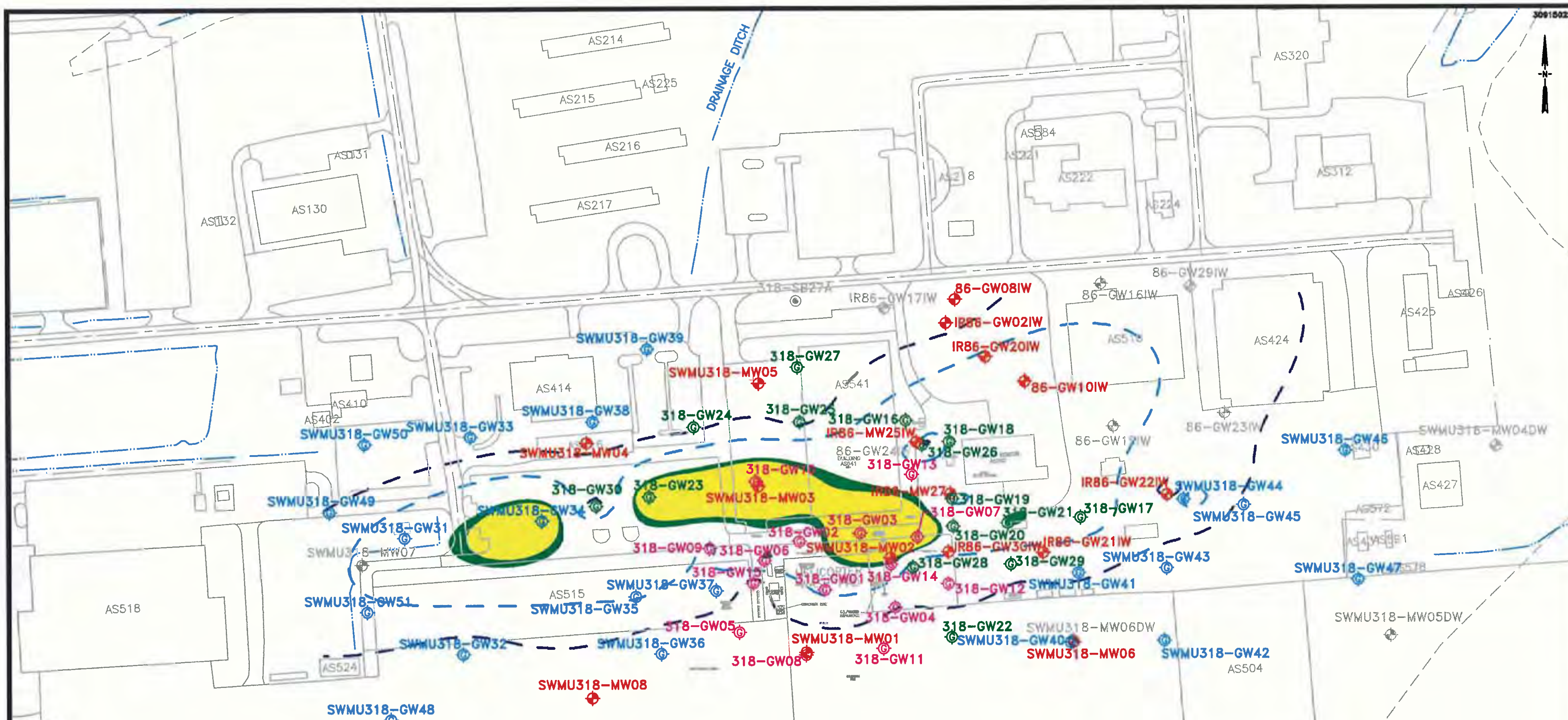
200 0 100 200
1 inch = 200 ft.

Baker

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

FIGURE 4-13
TCE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER (25'-34')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID.
CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 2L Standard (70 ppb)
- 10 ppb
- Detection Limit (2 ppb)

SOURCE: MCB, CAMP LEJEUNE, MARCH 2000.

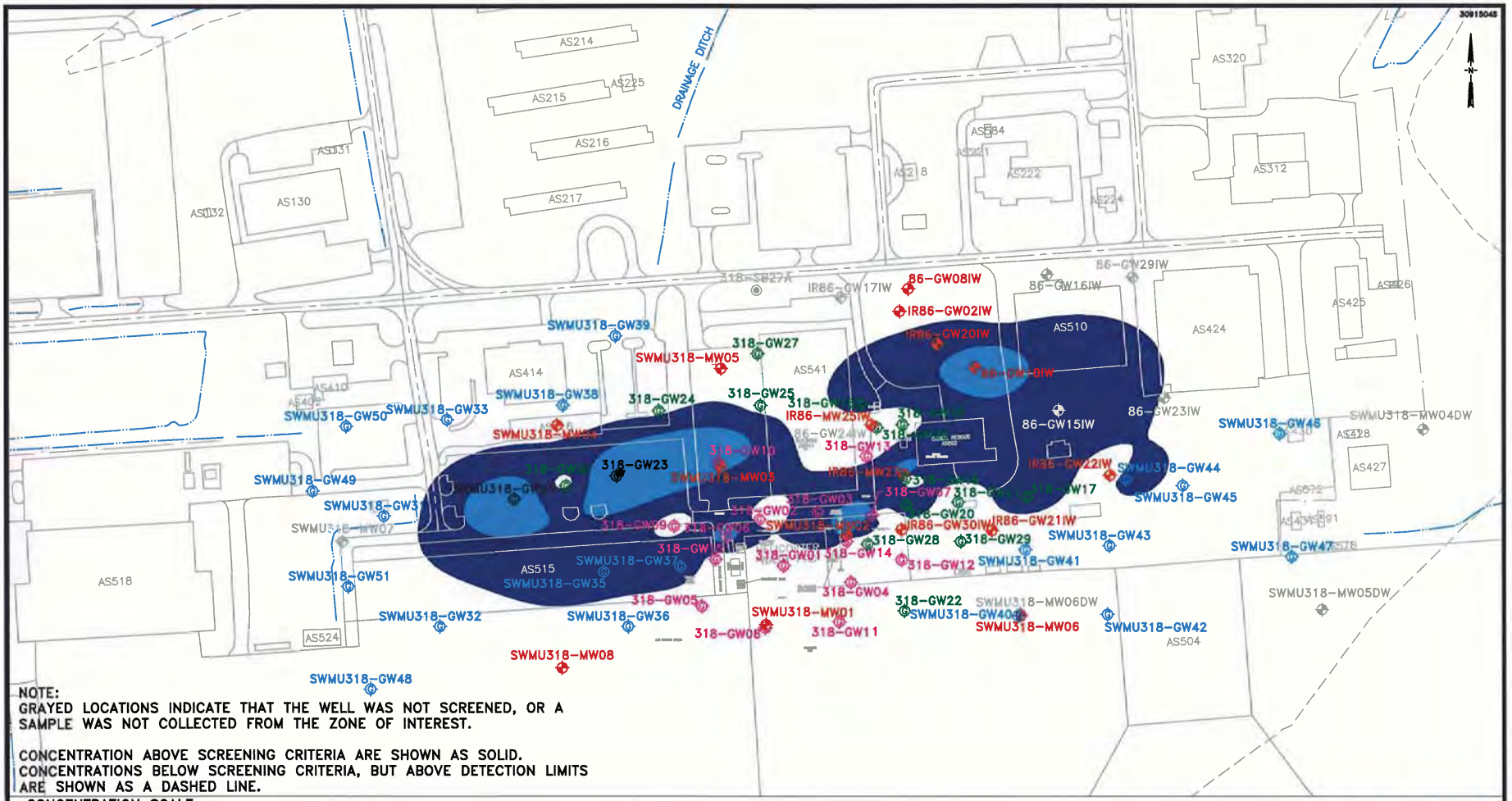
LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

200 0 100 200
1 inch = 200 ft.

Baker

FIGURE 4-14
CIS-1,2-DCE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER (25'-34')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID.
CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 10 ppb
- Detection Limit (2 ppb)

200 0 100 200
1 inch = 200 ft.

Baker

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

FIGURE 4-15
VINYL CHLORIDE CONCENTRATIONS IN INTERMEDIATE GROUNDWATER (25'-34')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

SOURCE: MCB, CAMP LEJEUNE, MARCH 2000.

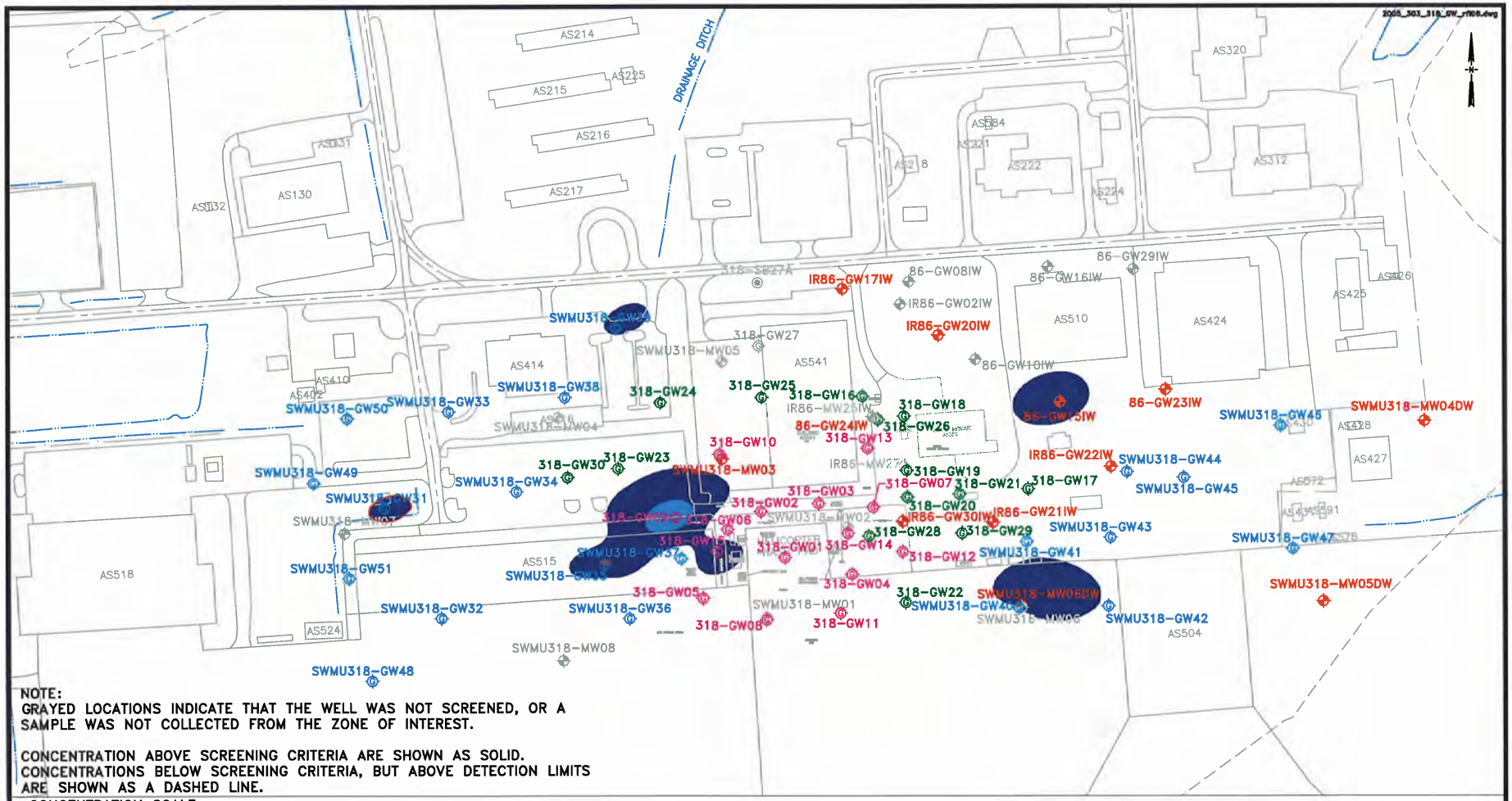
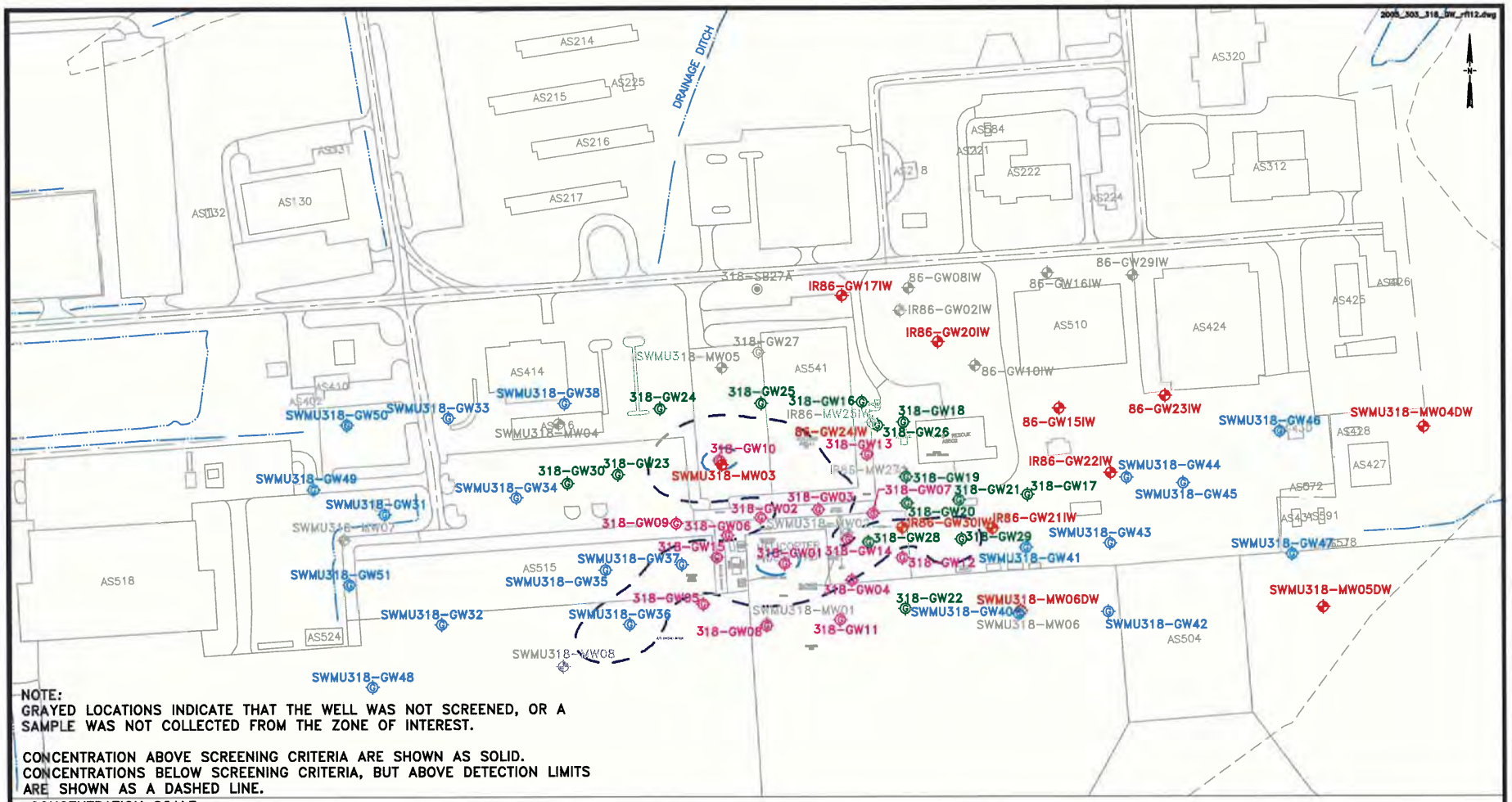


FIGURE 4-16
BENZENE CONCENTRATIONS IN DEEP GROUNDWATER (40'-44')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO – 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



NOTE:
GRAYED LOCATIONS INDICATE THAT THE WELL WAS NOT SCREENED, OR A SAMPLE WAS NOT COLLECTED FROM THE ZONE OF INTEREST.

CONCENTRATION ABOVE SCREENING CRITERIA ARE SHOWN AS SOLID. CONCENTRATIONS BELOW SCREENING CRITERIA, BUT ABOVE DETECTION LIMITS ARE SHOWN AS A DASHED LINE.

CONCENTRATION SCALE

- 5,000 ppb
- 1,000 ppb
- 100 ppb
- 2L Standard (21 ppb)
- 10 ppb
- Detection Limit (2ppb)

200 0 100 200
1 inch = 200 ft.

LEGEND

- PHASE I RFI GROUNDWATER GRAB LOCATION
- PHASE II RFI GROUNDWATER GRAB LOCATION
- PHASE III RFI GROUNDWATER GRAB LOCATION
- MONITORING WELL LOCATION

SOURCE: MCB CAMP LEJEUNE MARCH 2000

FIGURE 4-17
NAPHTHALENE CONCENTRATIONS IN DEEP GROUNDWATER (40-44')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO - 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

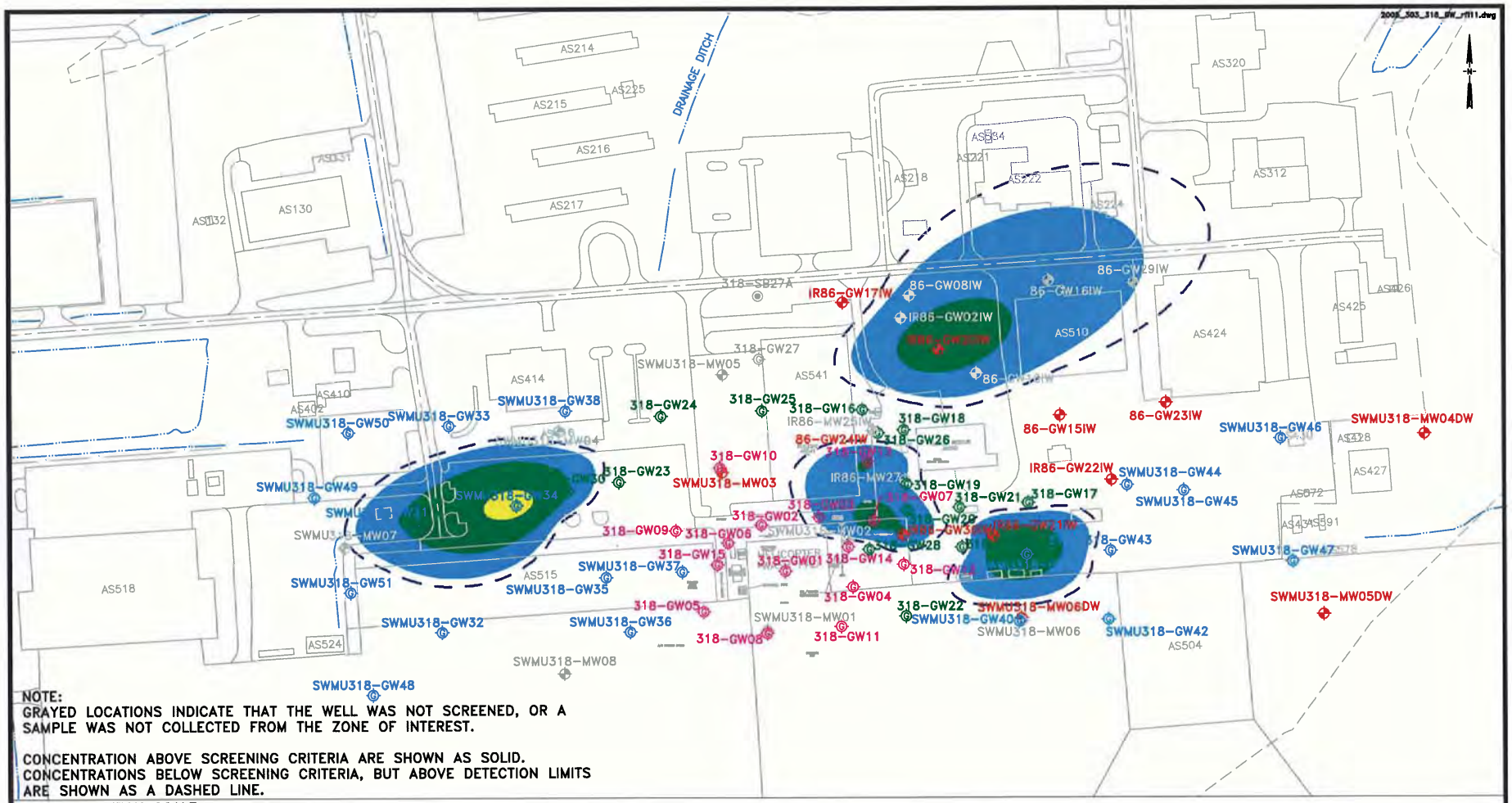


FIGURE 4-18
TCE CONCENTRATIONS IN DEEP GROUNDWATER (40-44')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO – 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

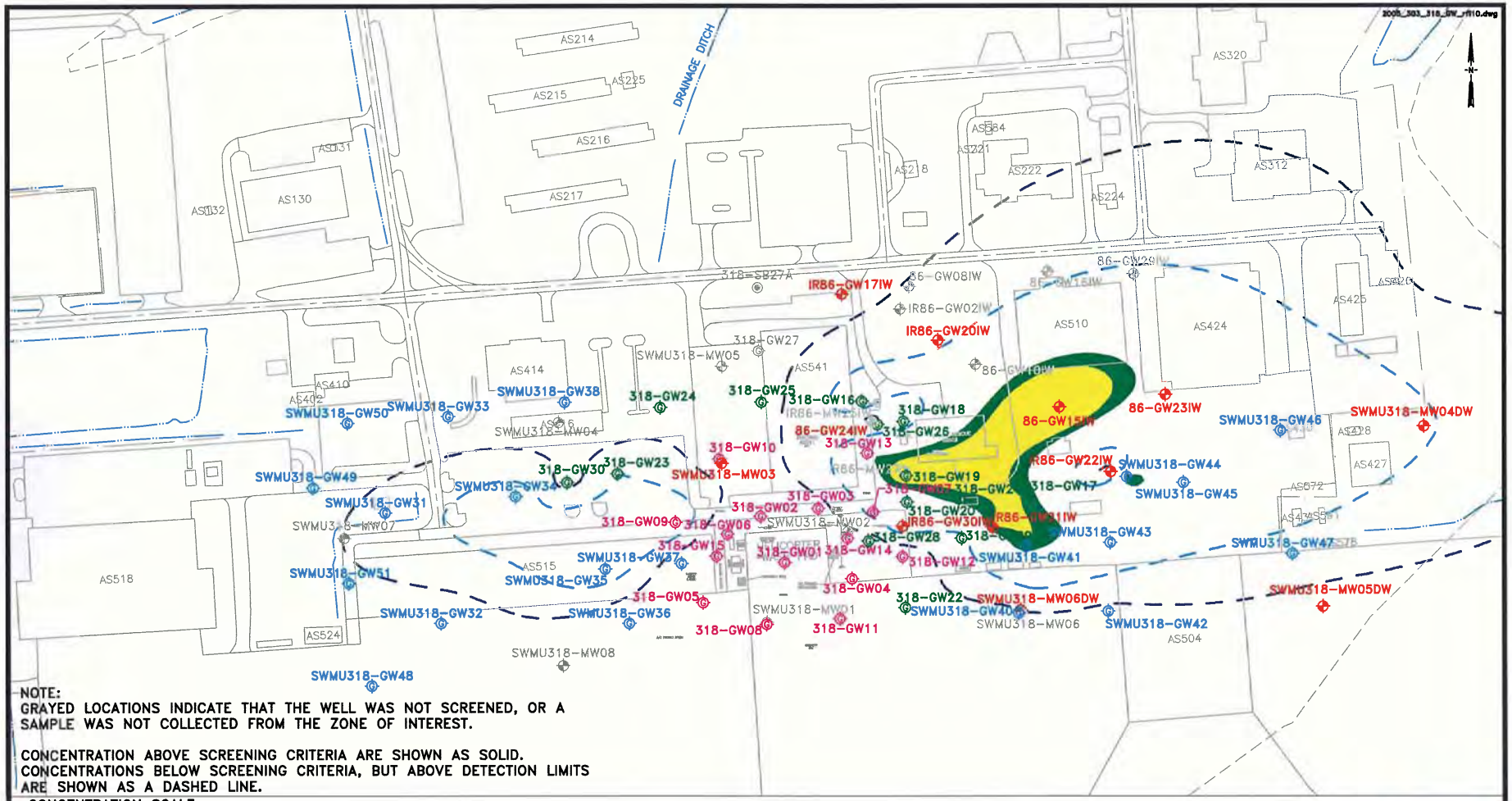
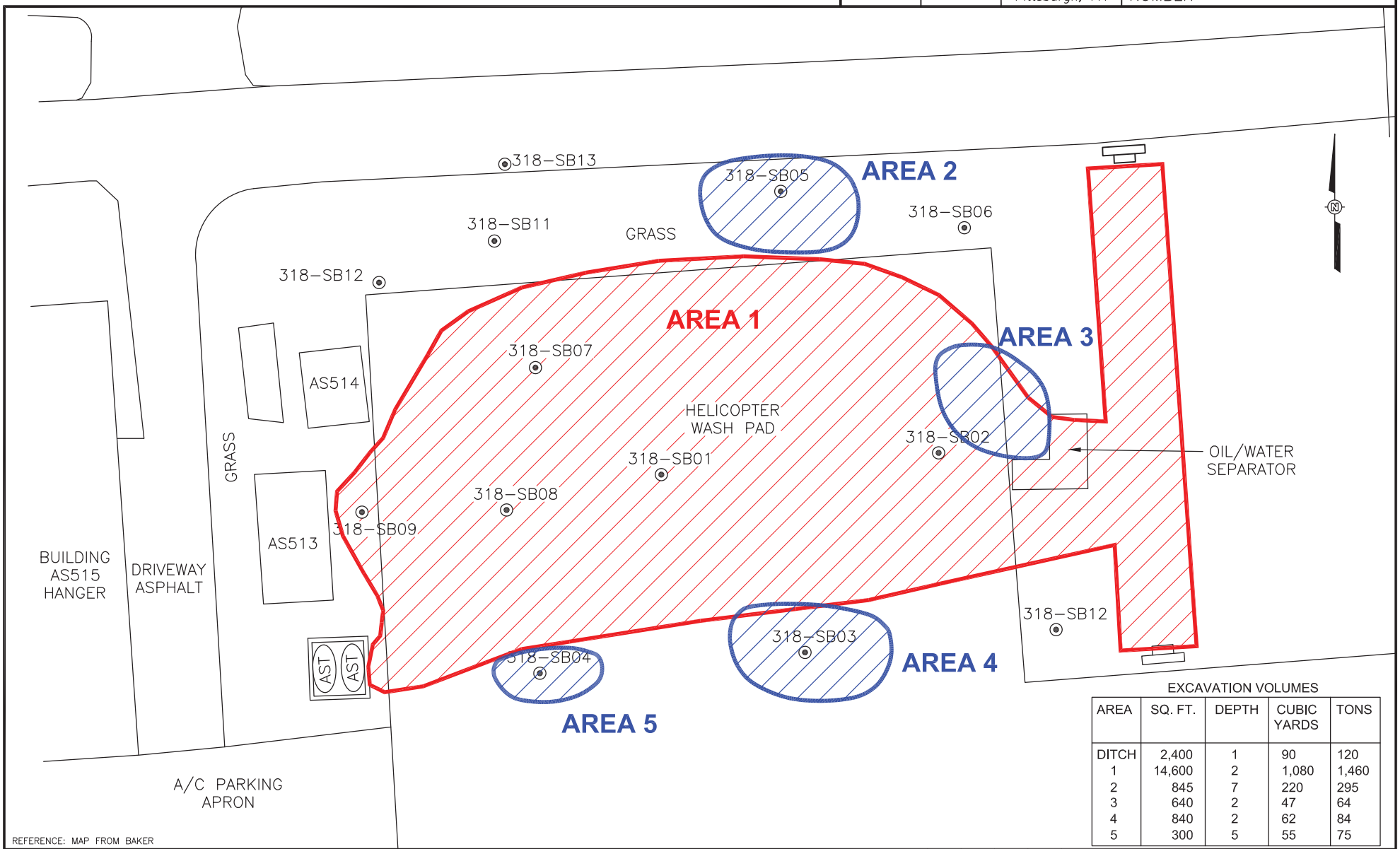


FIGURE 4-19
CIS-1,2-DCE CONCENTRATIONS IN DEEP GROUNDWATER (40-44')
SWMU 303/318
RCRA FACILITY INVESTIGATION
CTO – 0091
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Interim Measure Implementation Report (Shaw, 2006)

File: Y:\LEJEUNE-6-05\RAC_IV\TO_14-SWMUS\WORK_PLANS\846069-SWMU-303-318-1-7.dwg
Plot Date/Time: Dec 19, 2005 – 3:37pm
Plotted By: john.lange
Xref:
Image: lejeune1.tif

IMAGE	X-REF	OFFICE	DRAWING NUMBER	846069-FIG1
---	---	Pittsburgh, PA		



EXCAVATION VOLUMES

AREA	SQ. FT.	DEPTH	CUBIC YARDS	TONS
DITCH	2,400	1	90	120
1	14,600	2	1,080	1,460
2	845	7	220	295
3	640	2	47	64
4	840	2	62	84
5	300	5	55	75

REFERENCE: MAP FROM BAKER

SHEET I.D. 1.7
NAVFAC DRAWING NO. ?
CONSTR. CONTRACT NO. N62470-02-D-3260
DELIVERY ORDER NO. 0014
SCALE: AS SHOWN
SIZE: A

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — ATLANTIC DIVISION — NORFOLK, VIRGINIA

SWMU 303/318 SITE MAP

SITE PLAN

Shaw
Shaw Environmental, Inc.
PROJECT NO. 846069

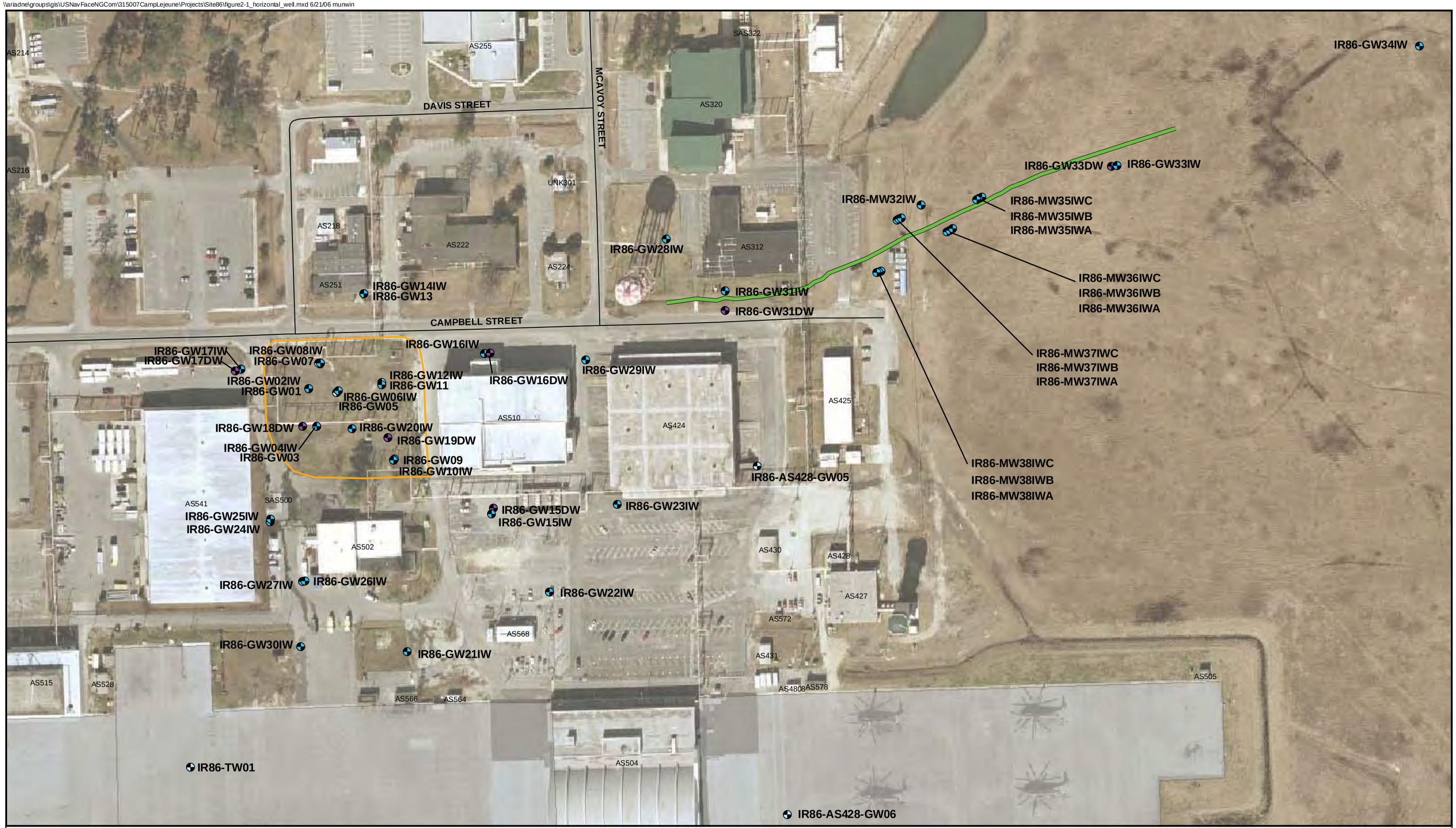
DESIGNED BY			CHECKED BY		
DRAWN BY			APPROVED BY		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REVISIONS

Technology Evaluation (CH2M HILL, 2003) and Air/Ozone Sparging Pilot Study (CH2M HILL Hill, 2006b)

\\ariadne\groups\gis\USNavFaceNGCom\315007CampLejeune\Projects\Site86\figure2-1_horizontal_well.mxd 6/21/06 munwin



Legend

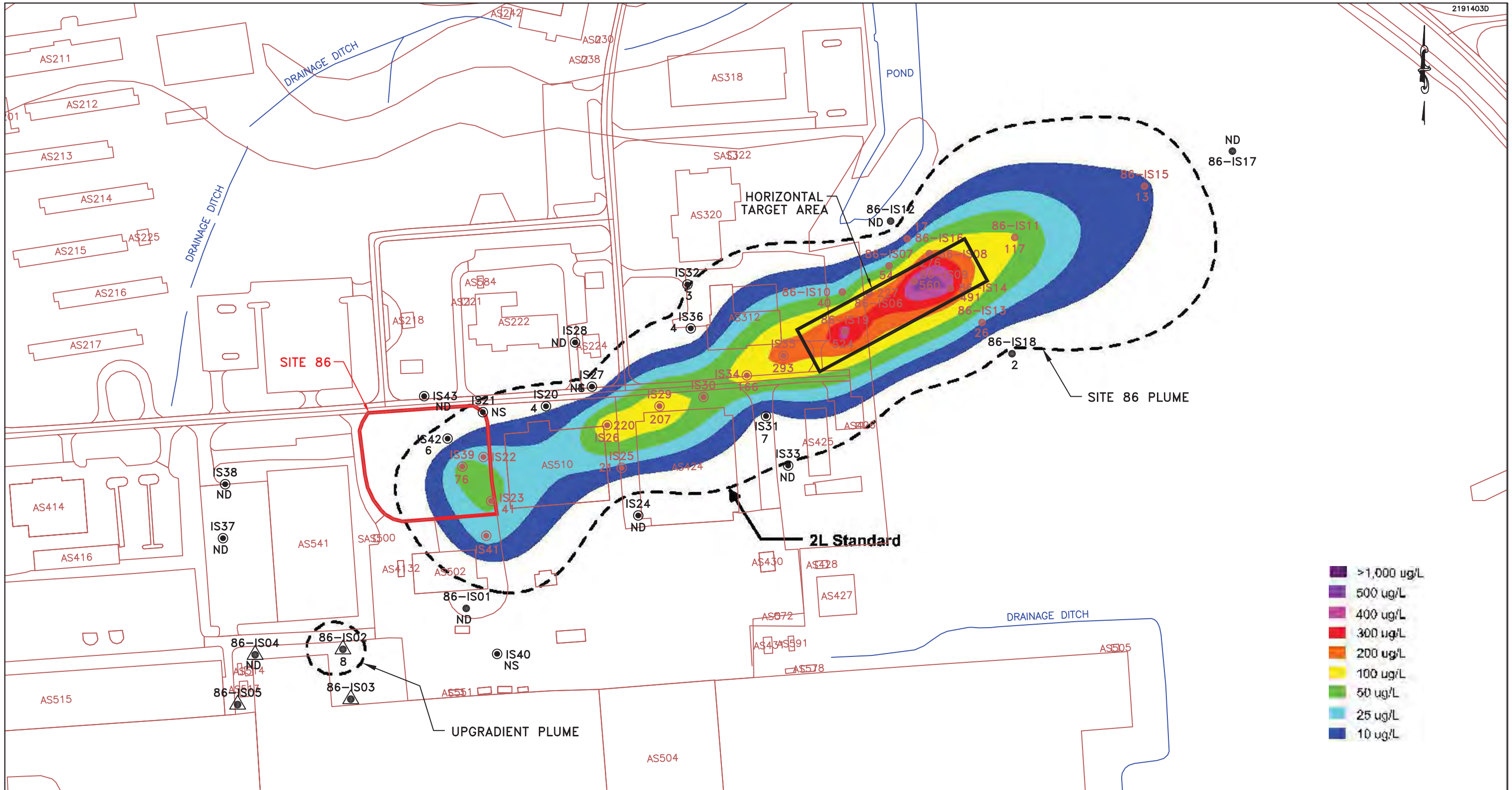
- Site 86 Boundary
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Road
- Airfield Surface Area
- Surface Water
- Horizontal Well

N W E S

0 150 300 Feet

Figure 2-1
Horizontal Well Layout Map
Operable Unit No. 20 - Site 86
Pilot Study Report
MCB Camp Lejeune, North Carolina

AGVIQ ENVIRONMENTAL SERVICES
CH2M HILL JOINT VENTURE



LEGEND

- ● – AUGUST 2001 GROUNDWATER SAMPLING LOCATION
- ▲ – SUBSURFACE SOIL AND GROUNDWATER SAMPLING LOCATION
- ◉ – JANUARY 2002 GROUNDWATER SAMPLING LOCATION
- ND – COMPOUND NOT DETECTED
- NS – INTERVAL NOT SAMPLED

FIGURE 3-1
HORIZONTAL WELL TARGET AREA
TCE PLUME (40 TO 44 FEET BGS)
OPERABLE UNIT No. 20 - SITE 86
TECHNOLOGY EVALUATION REPORT
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

CH2MHILL

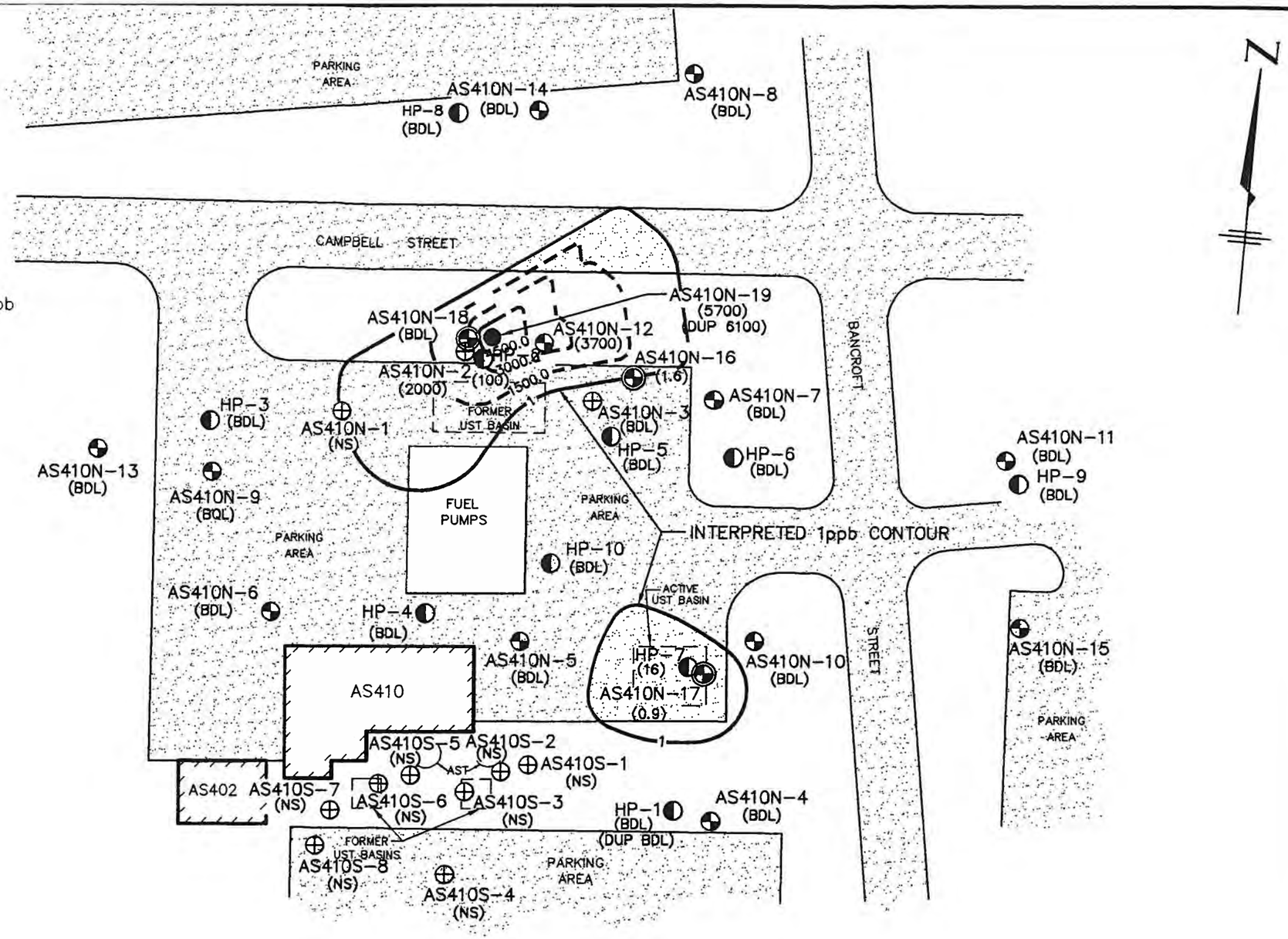
P:/PROJ/EBT/NAVY CLEAN/CTO 253/SITE 86/86 TECH EVALUATION /CADD FILES

SOURCE: Amended Remedial Investigation, Operable Unit No. 20, Site 86 – Tank Area AS419 – AS421, BAKER ENVIRONMENTAL, Inc. May, 2000.

UST AS410N (Catlin, 1994)

LEGEND

- ⊕ PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- ● PUMPING WELL
- HYDROPUNCH
- BUILDING
- ( ) TOTAL BENZENE CONCENTRATIONS IN ppb
- BDL BELOW DETECTABLE LIMITS
- BQL BELOW QUANTATION LIMIT
- NS NOT SAMPLED



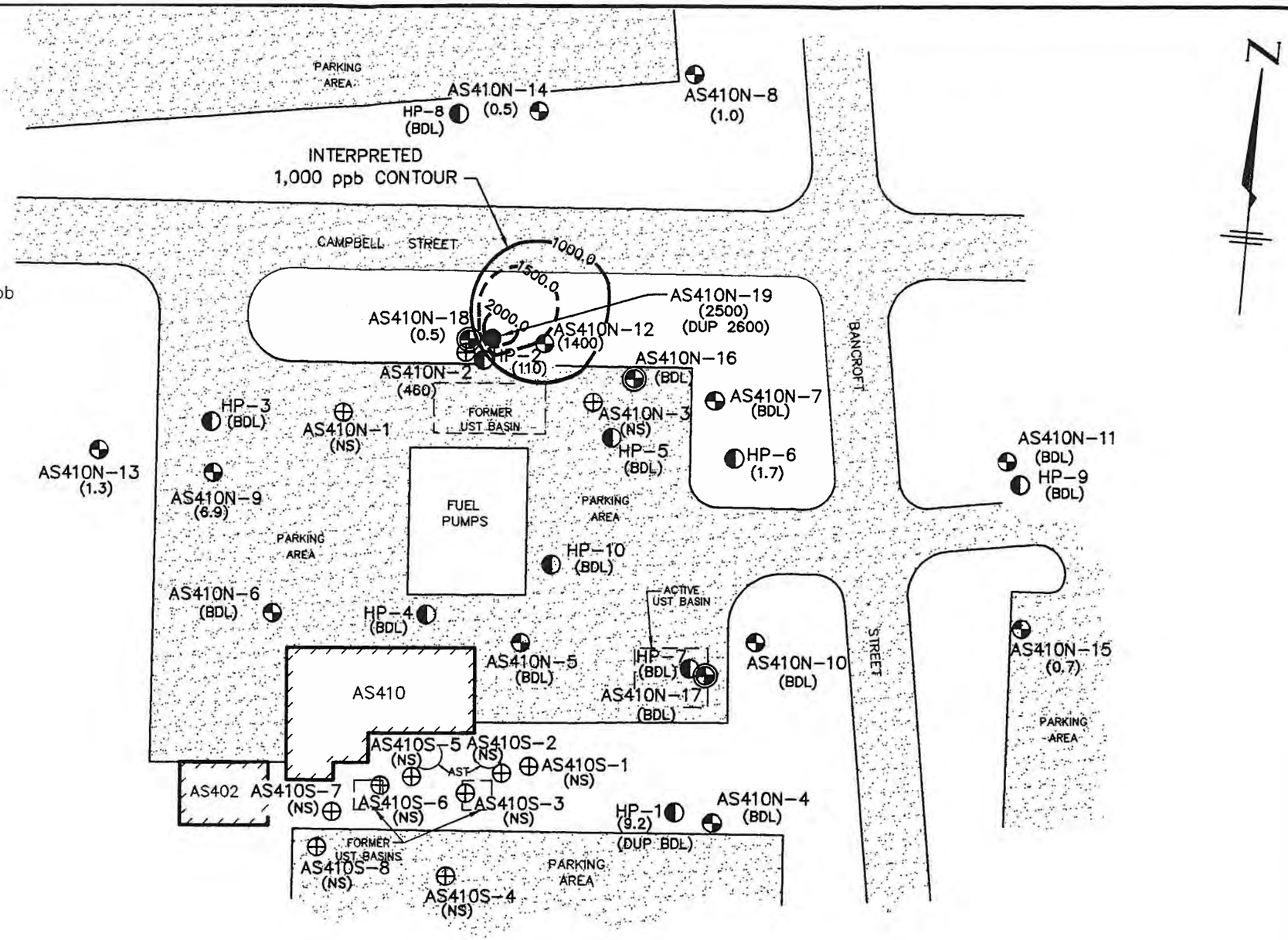
NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHER CONCENTRATION WAS USED FOR CONTOURING.
3. CONTOUR INTERVAL = 1500 ppb

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE BENZENE CONCENTRATIONS (WATER) - ISOPLETH MAP		FIGURE 5.4
	JOB NO. 93125-NS / DATE: 14 OCT 93	SCALE: AS SHOWN	DRAWN BY: WW DH SB / CHECKED BY: JC	

LEGEND

- PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- PUMPING WELL
- HYDROPUNCH
- BUILDING
- ( ) TOTAL TOLUENE CONCENTRATIONS IN ppb
- NS NOT SAMPLED
- BQL BELOW QUANTITATION LIMITS
- BDL BELOW DETECTABLE LIMITS



40 0 40
SCALE IN FEET

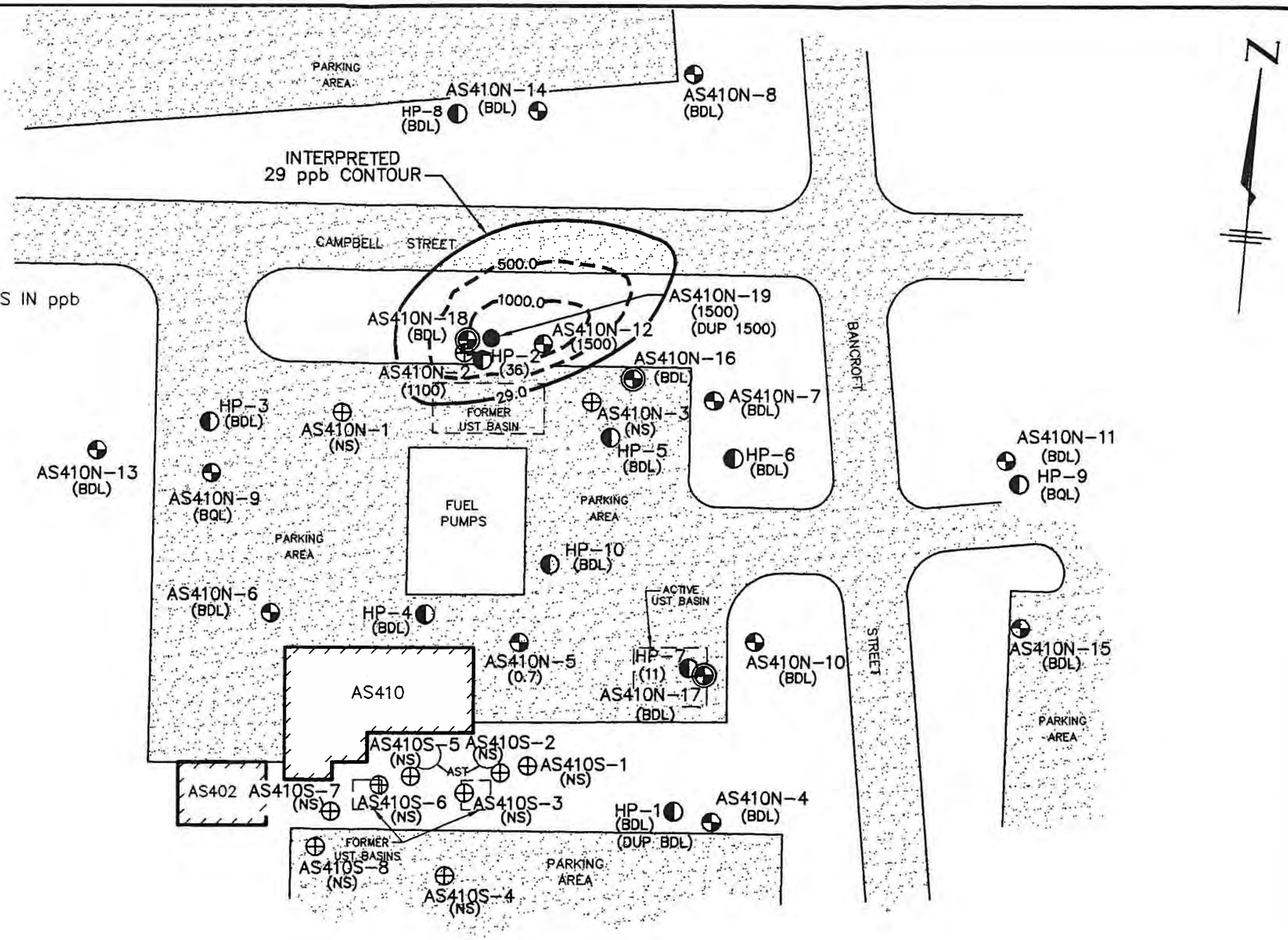
NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. TYPE III WELLS NOT USED IN CONTOURING
3. CONTOUR INTERVAL = 500 ppb
4. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHEST VALUE WAS USED FOR CONTOURING.

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC RC&A	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE TOLUENE CONCENTRATIONS (WATER) ISOPLETH MAP		FIGURE 5.5
	JOB NO. 93125-NS DATE: 14 OCT 93	SCALE: AS SHOWN	DRAWN BY: WW DH SB	CHECKED BY: JC

LEGEND

- PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- PUMPING WELL
- HYDROPUNCH
- BUILDING
- ( ) TOTAL ETHYL BENZENE CONCENTRATIONS IN ppb
- BDL BELOW DETECTABLE LIMITS
- BQL BELOW QUANTITATION LIMITS
- NS NOT SAMPLED



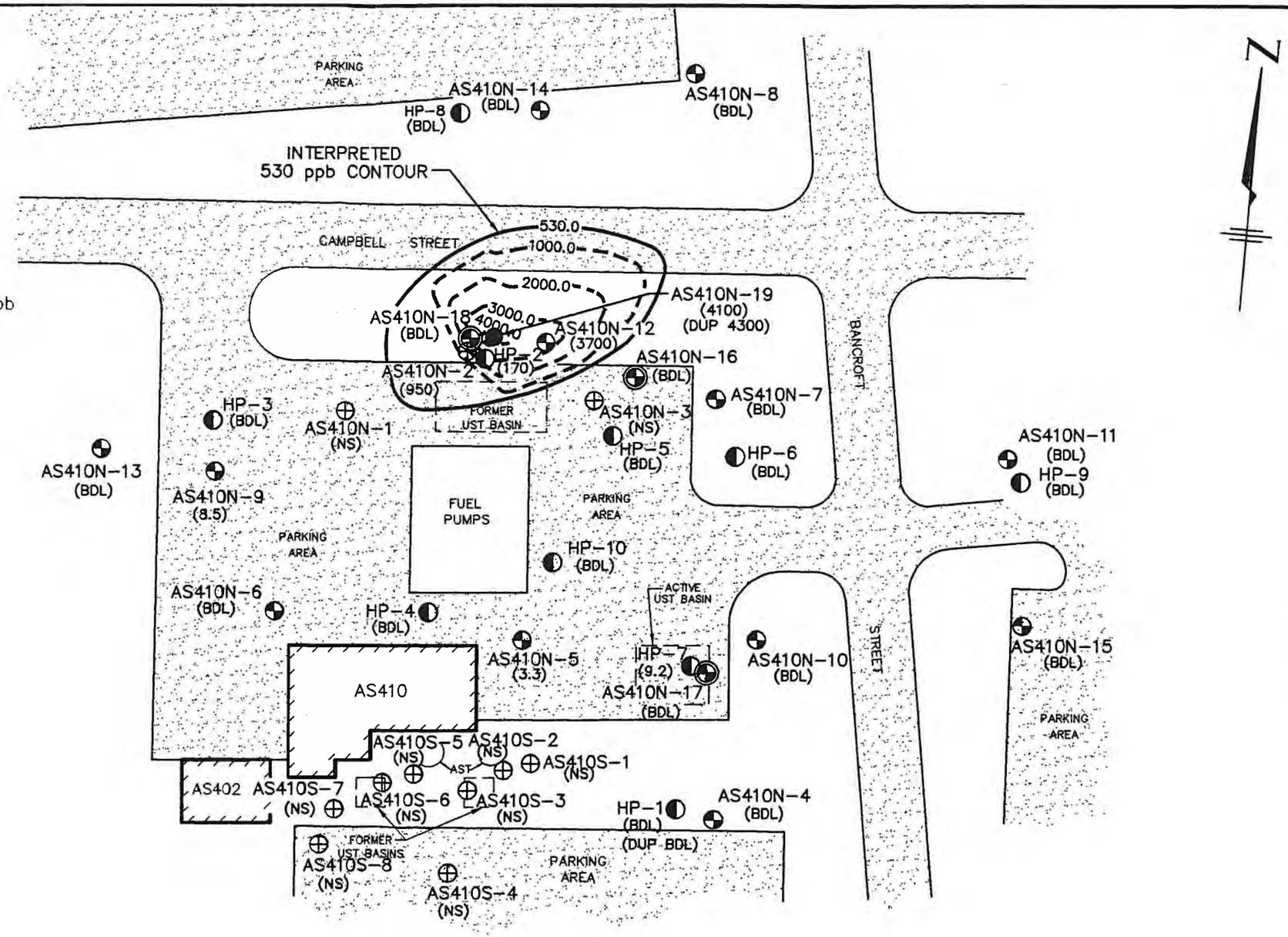
NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. TYPE III WELLS NOT USED IN CONTOURING
3. CONTOUR INTERVAL = 500 ppb
4. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHEST VALUE WAS USED FOR CONTOURING.

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC RC&A	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE ETHYL BENZENE CONCENTRATIONS (WATER) ISOPLETH MAP	FIGURE 5.6
	JOB NO. 93125-NS DATE: 14 OCT 93	SCALE: AS SHOWN DRAWN BY: WW DH SB CHECKED BY: JC	

LEGEND

- PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- PUMPING WELL
- HYDROPUNCH
- BUILDING
- ( ) TOTAL XYLENES CONCENTRATIONS IN ppb
- NS NOT SAMPLED
- BDL BELOW DETECTABLE LIMITS



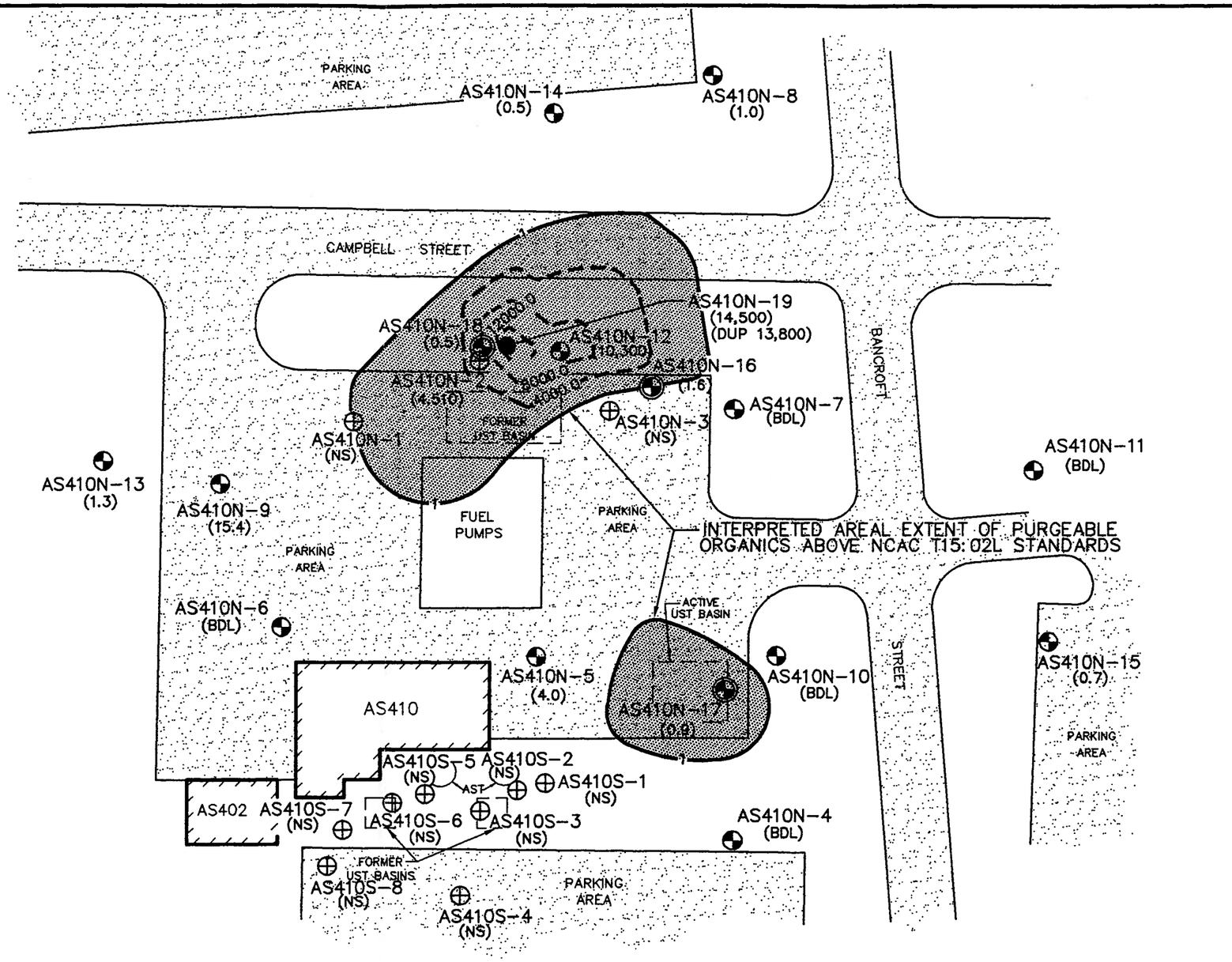
NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. TYPE III WELLS NOT USED IN CONTOURING
3. CONTOUR INTERVAL = 1,000 ppb
4. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHEST VALUE WAS USED FOR CONTOURING.

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE TOTAL XYLENES CONCENTRATIONS (WATER) ISOPLETH MAP	FIGURE 5.7
	JOB NO. 93125-NS DATE: 14 OCT 93	SCALE: AS SHOWN DRAWN BY: WW DH SB CHECKED BY: JC	

LEGEND

- PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- PUMPING WELL
- BUILDING
- ( ) TOTAL BTEX CONCENTRATIONS IN ppb
- NS NOT SAMPLED
- BDL BELOW DETECTABLE LIMITS



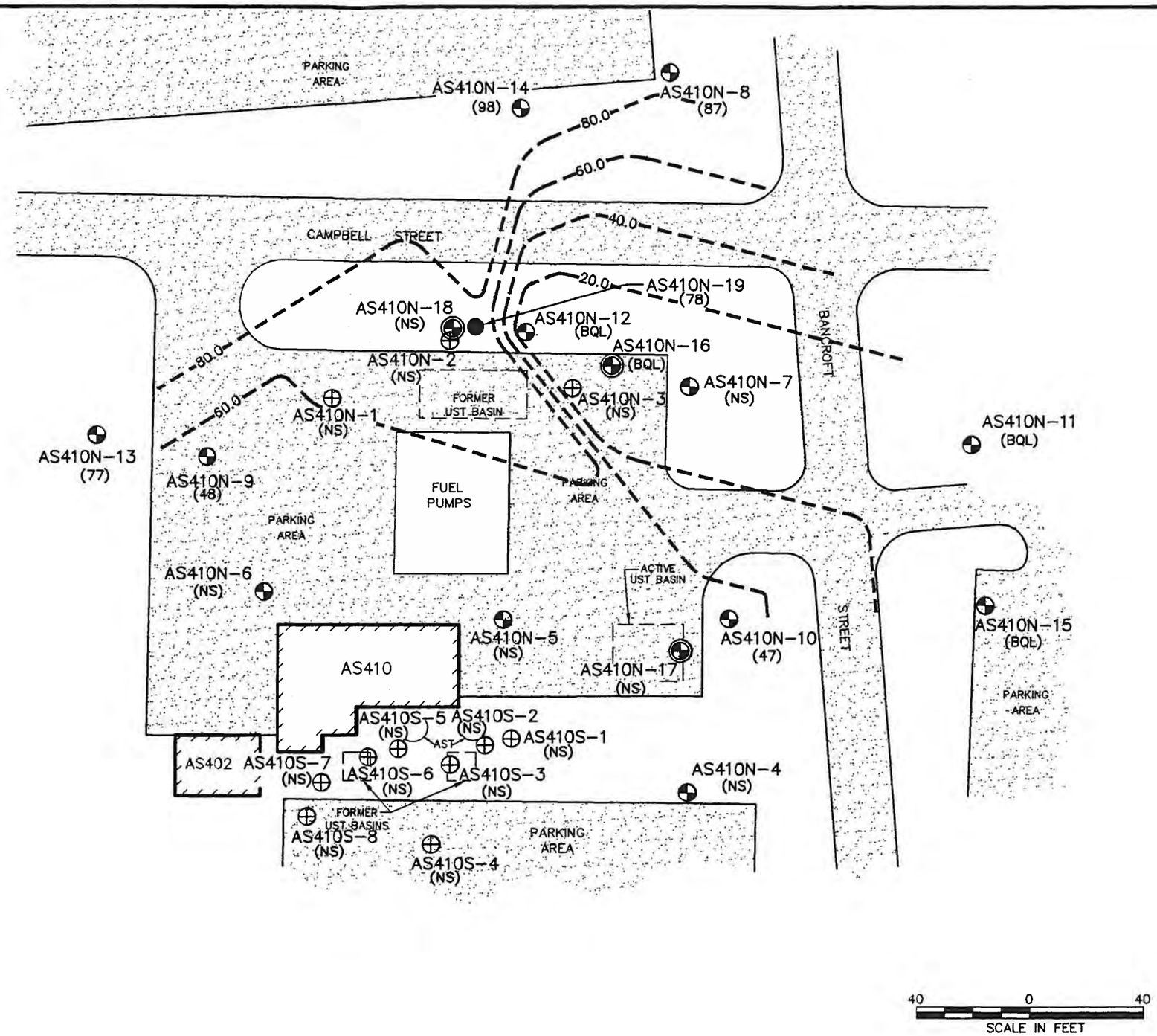
NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. TYPE III WELLS NOT USED IN CONTOURING
3. CONTOUR INTERVAL = 4,000 ppb
4. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHEST VALUE WAS USED FOR CONTOURING.

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC RC&A	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE TOTAL BTEX CONCENTRATIONS (WATER) - ISOPLETH MAP	FIGURE 5.8
	JOB NO. 93125-NS DATE: 14 OCT 93	SCALE: AS SHOWN DRAWN BY: WW DH SB CHECKED BY: JC	

LEGEND

- PRE-EXISTING TYPE II WELL
- TYPE II WELL
- TYPE III WELL
- PUMPING WELL
- BUILDING
- ( ) TOTAL LEAD CONCENTRATIONS IN ppb
- NS NOT SAMPLED
- BQL BELOW QUANTITATION LIMITS



NOTES:

1. ADAPTED FROM SURVEYED SITE MAP PROVIDED BY MICHAEL UNDERWOOD & ASSOCIATES, RLS
2. TYPE III WELLS NOT USED IN CONTOURING
3. CONTOUR INTERVAL = 20 ppb

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC RC&A	PROJECT BUILDING AS-410 LANTDIV NAVFACENGCOM MCAS NEW RIVER	TITLE LEAD CONCENTRATIONS (WATER) – ISOPLETH MAP	FIGURE 5.9
	JOB NO. 93125-NS / DATE: 14 OCT 93	SCALE: AS SHOWN / DRAWN BY: WW DH SB / CHECKED BY: JC	

UST AS410S (Catlin, 1994)

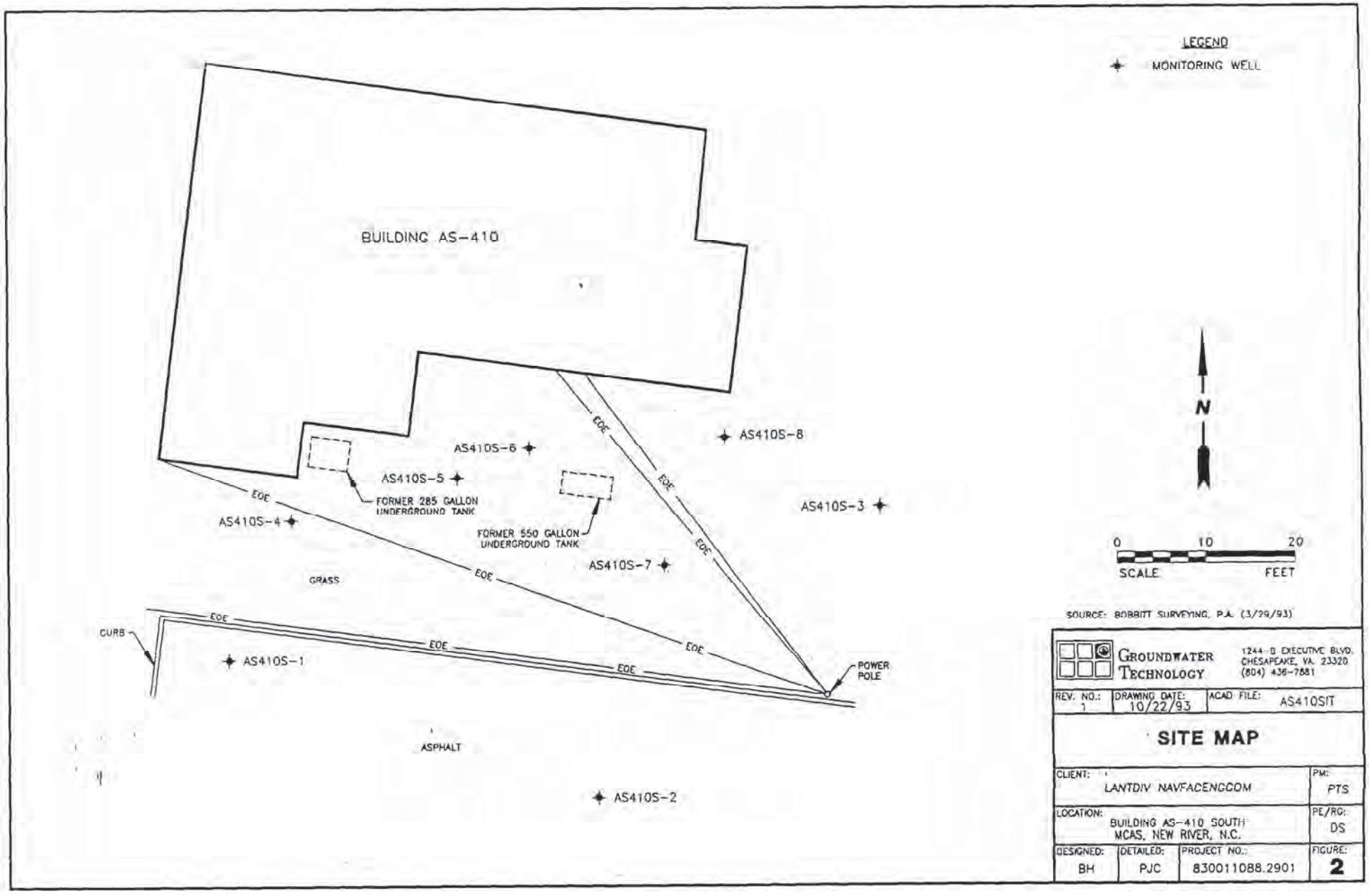
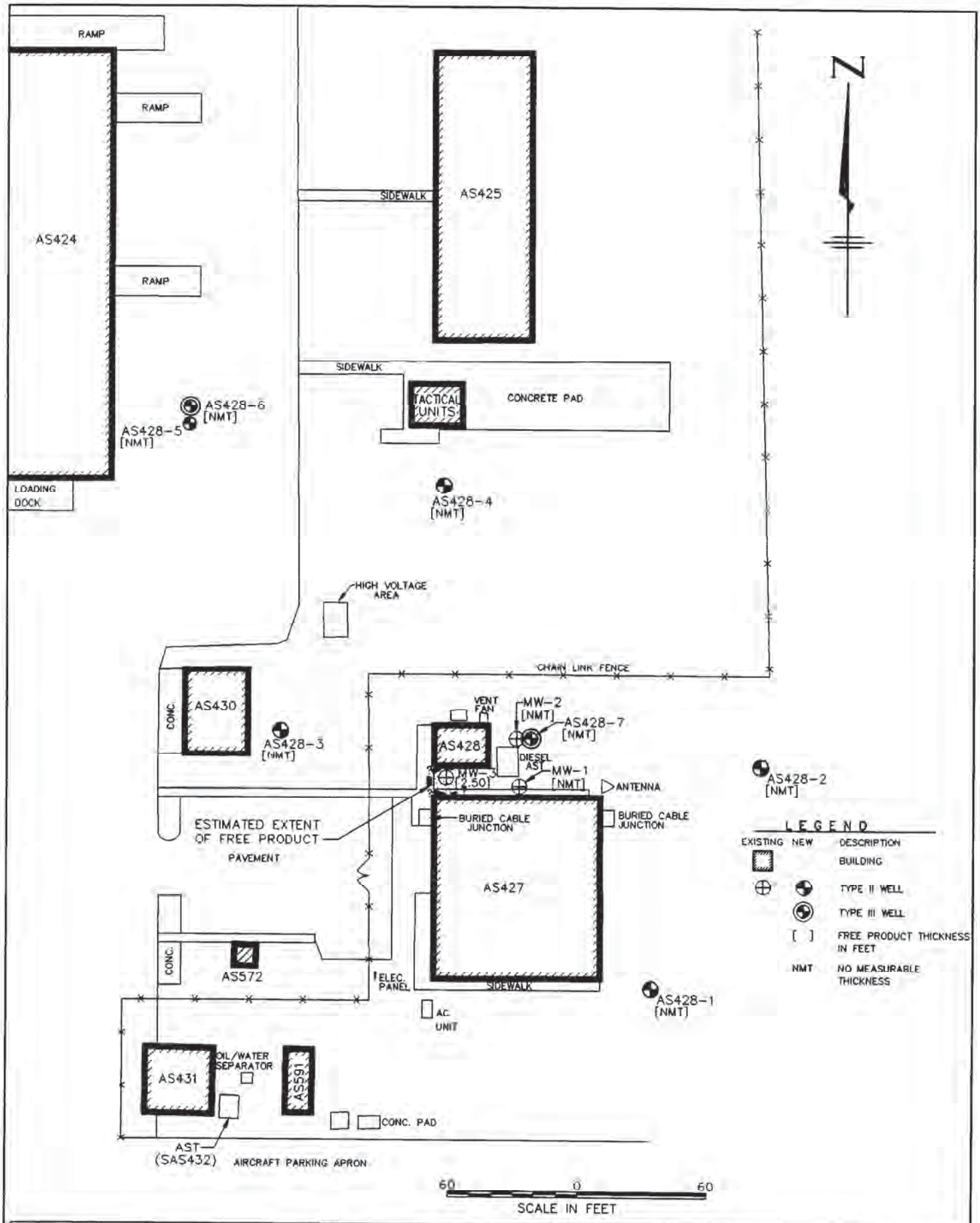

LEGEND
MONITORING WELL
BUILDING AS-410
AS410S-1
AS410S-2
AS410S-3
AS410S-4
AS410S-5
AS410S-6
AS410S-7
AS410S-8
FORMER 285 GALLON UNDERGROUND TANK
FORMER 550 GALLON UNDERGROUND TANK
EOE
GRASS
ASPHALT
CURB
POWER POLE
N
0 10 20
SCALE FEET
SOURCE: BOBBITT SURVEYING, P.A. (3/29/93)
GROUNDWATER TECHNOLOGY
1244-B EXECUTIVE BLVD.
CHESAPEAKE, VA. 23320
(804) 436-7881
REV. NO.: 1
DRAWING DATE: 10/22/93
ACAD FILE: AS410SIT
SITE MAP
CLIENT: LANTDIV NAVFACENGCOM
PM: PTS
LOCATION: BUILDING AS-410 SOUTH MCAS, NEW RIVER, N.C.
PE/RG: DS
DESIGNED: BH
DETAILED: PJC
PROJECT NO.: 830011088.2901
FIGURE: 2

Table 2
Summary of Groundwater Sample Analytical Results
By EPA Method 610 and
Modified EPA Method 602
October 7, 1993

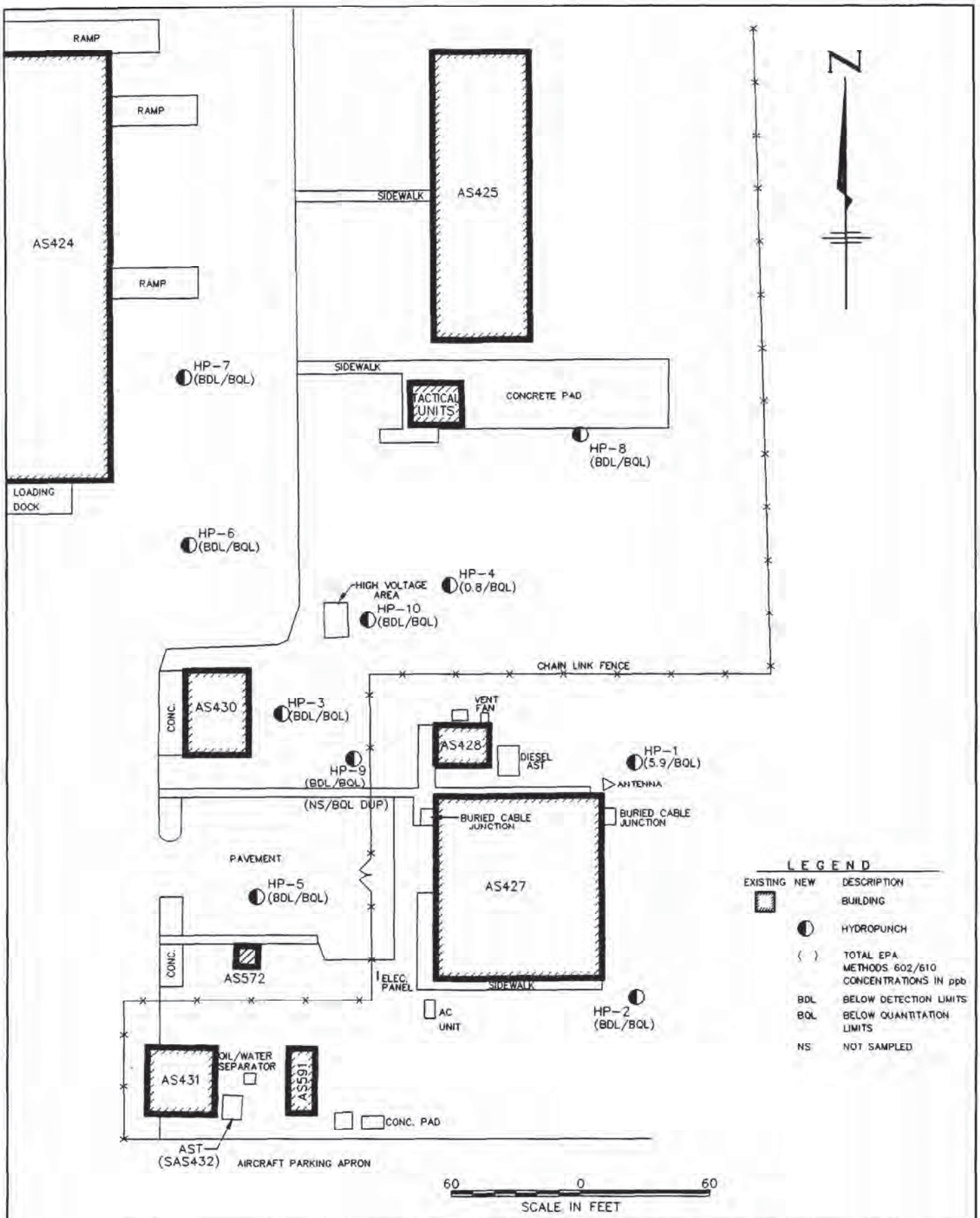
Analyte (EPA 610)	AS410S-4	AS410S-5	AS410S-6	AS410S-7	AS410S-8	AS410S7(DUP)
Naphthalene (ppb) 21	<1.8	<1.8	6.3	39	18	36
1-Methylnaphthalene (ppb)	<1.8	<1.8	4.6	14	5.4	13
2-Methylnaphthalene (ppb)	2.4	<1.8	5.6	14	5.7	13
Fluorene (ppb) 280	<0.21	<0.21	0.39	0.60	0.29	0.56
Phanathrene (ppb)	<0.64	<0.64	0.86	<0.64	<0.64	<0.64
Analyte (EPA 602)	**AS410S-4**	**AS410S-5**	**AS410S-6**	**AS410S-7**	**AS410S-8**	**AS410S-7(DUP)**
Benzene (ppb) 1*	--	--	--	11	7.8	--
Toluene (ppb) 1000*	--	--	--	<1.0	<1.0	--
Ethylbenzene (ppb) 29*	--	--	--	13	5.7	--
Xylenes (ppb) 530*	--	--	--	5.4	5.3	--

ppb = parts per billion (μg/L)
< = less than laboratory's reported method detection limit
NOTE: AS410S-7 (DUP) is a duplicate of sample AS410S-7
* = North Carolina Administrative Code, Department of Health & Natural Resources Division of Environmental Management allowable concentration levels

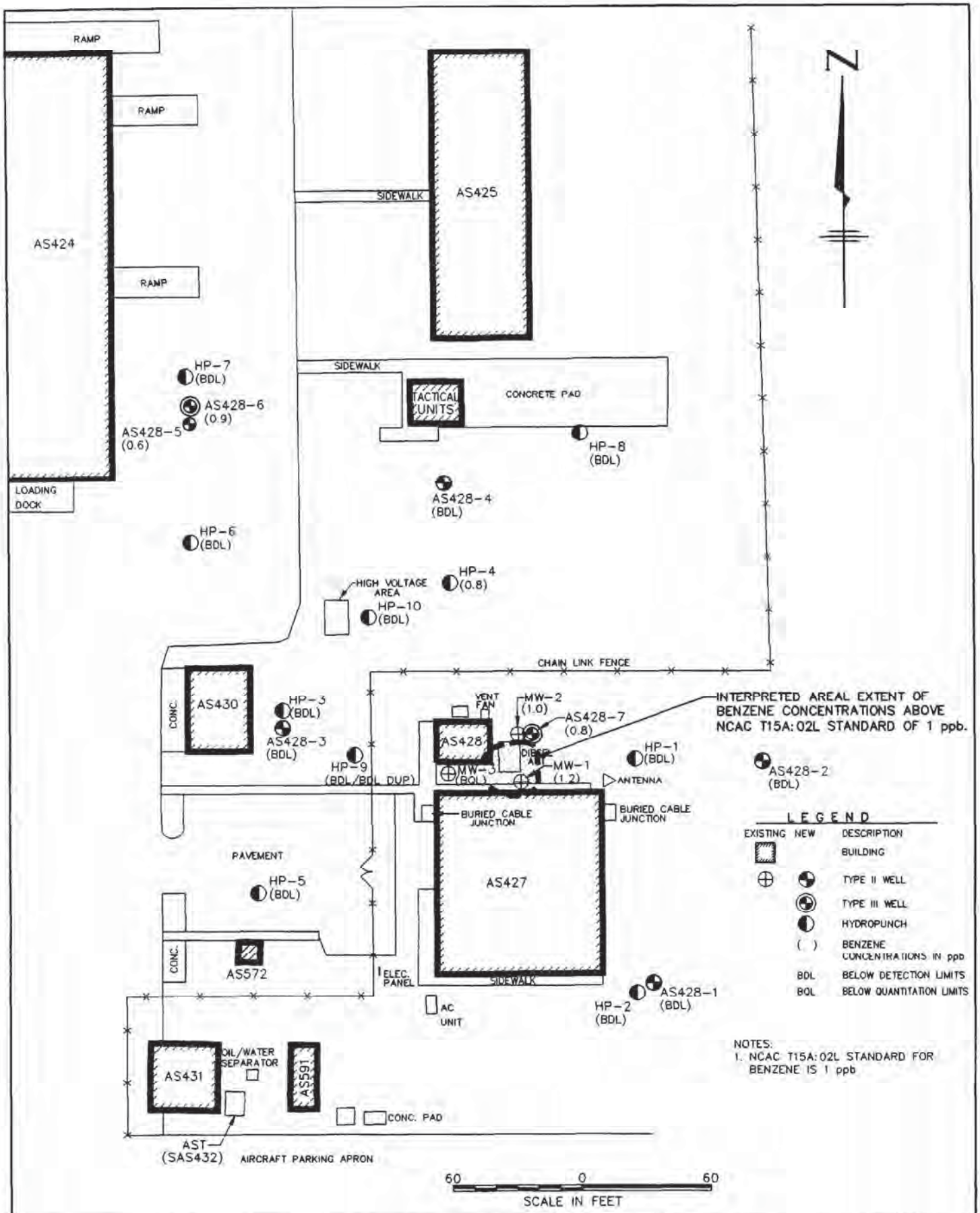
UST AS428 (Catlin, 1996)



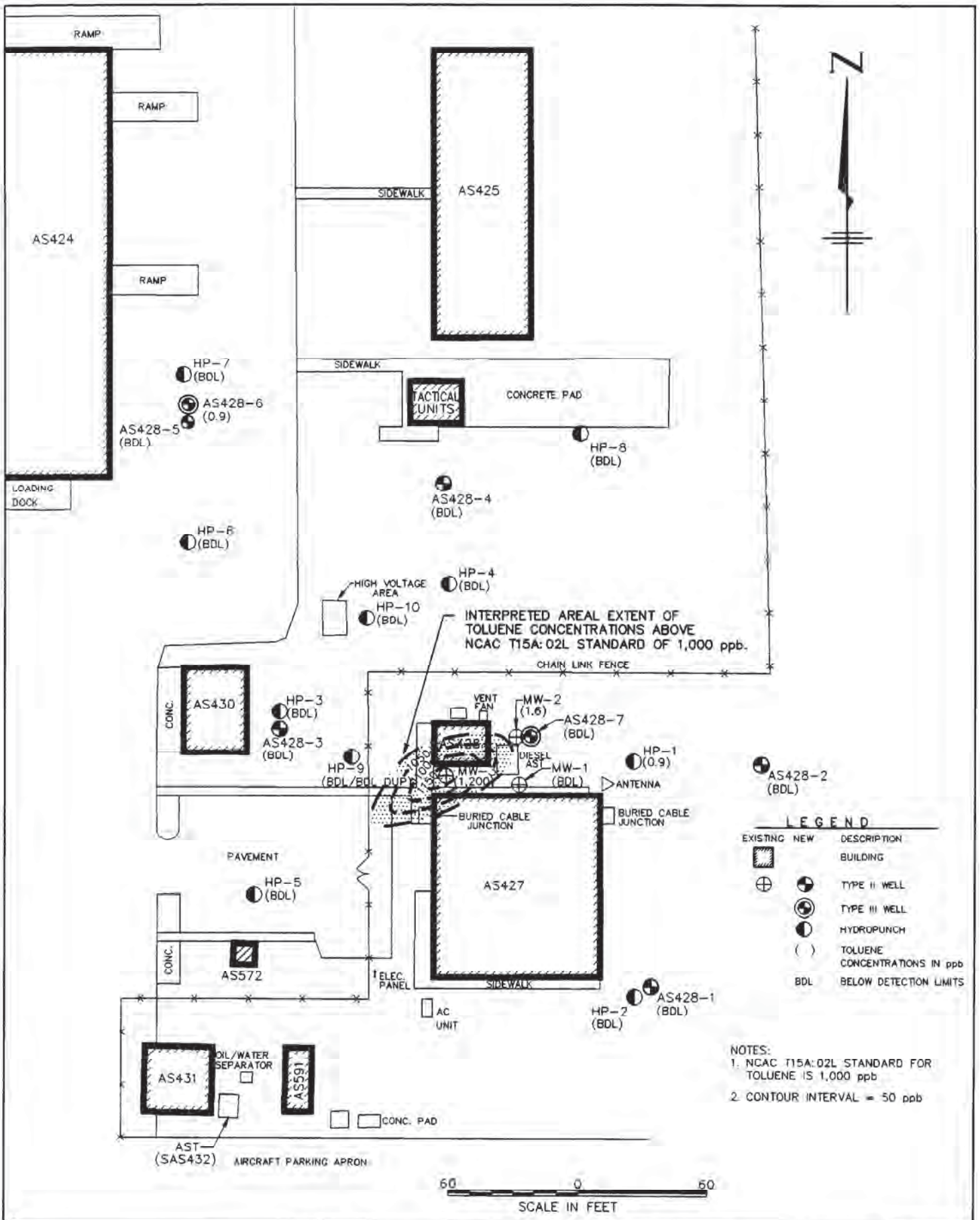
Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC	PROJECT: BUILDING AS-428 MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: FREE PRODUCT SPATIAL EXTENT ISOPLETH MAP		FIGURE 5.2
	JOB NO: 95045CSA DATE: MAY 1996	SCALE: 1"=60' DRAWN BY: WHW	CHECKED BY: TP	



Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC	PROJECT: BUILDING AS-428 MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: HYDROPUNCH DATA MAP	FIGURE 5.3
	JOB NO: 95045CSA DATE: MAY 1996	SCALE: 1"=60' DRAWN BY: WHW CHECKED BY: TP	



Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC	PROJECT: BUILDING AS-428 MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: BENZENE CONCENTRATIONS (WATER) ISOPLETH MAP	FIGURE 5.4
	JOB NO: 95045CSA DATE: MAY 1996	SCALE: 1"=60' DRAWN BY: WHW CHECKED BY: TP	



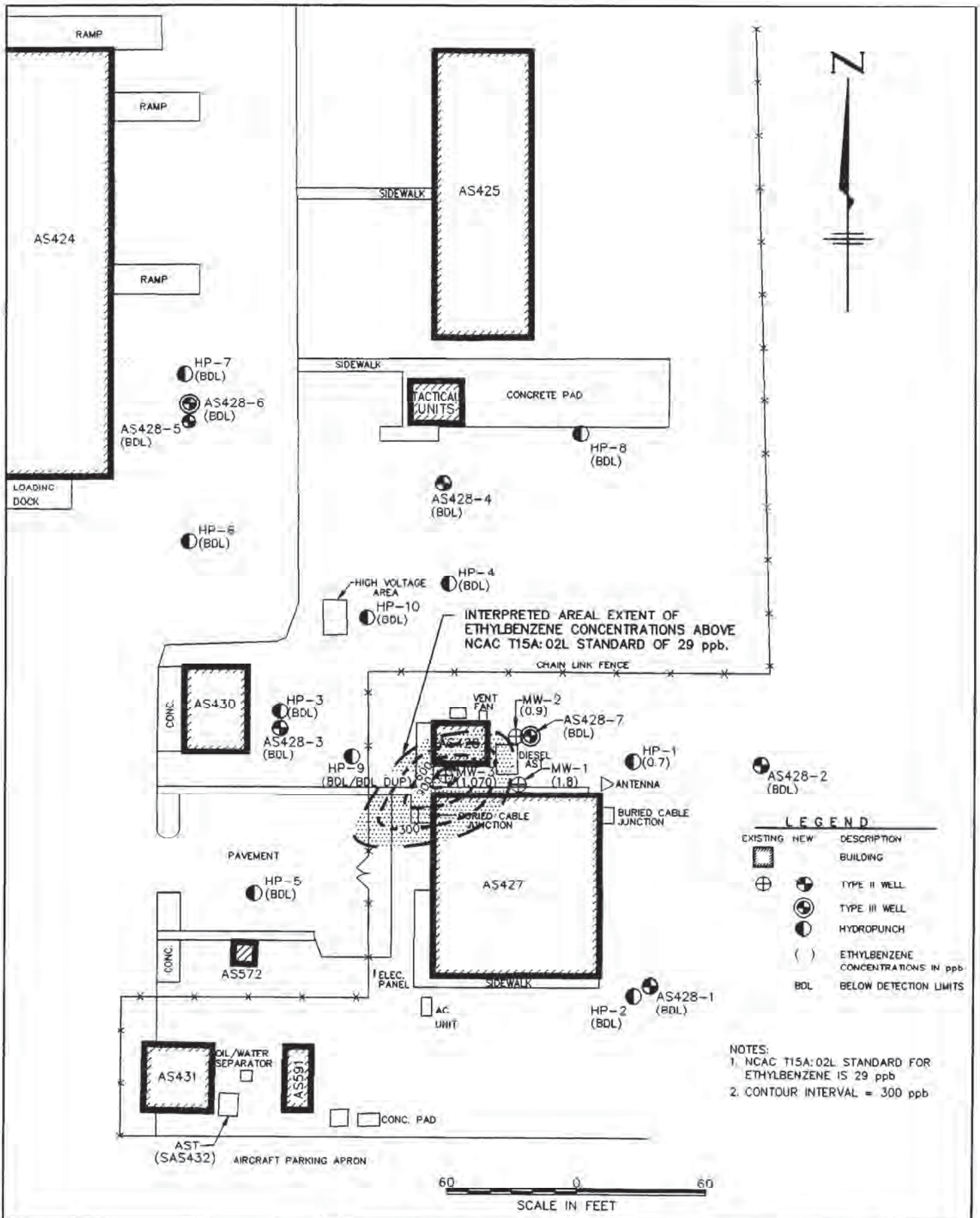
Richard Callin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC

PROJECT: BUILDING AS-428
MARINE CORPS AIR STATION
NEW RIVER, N.C.

TITLE: TOLUENE CONCENTRATIONS (WATER) ISOPLETH MAP

FIGURE 5.5

JOB NO: 95045CSA | DATE: MAY 1996 | SCALE: 1"=60' | DRAWN BY: WHW | CHECKED BY: TP



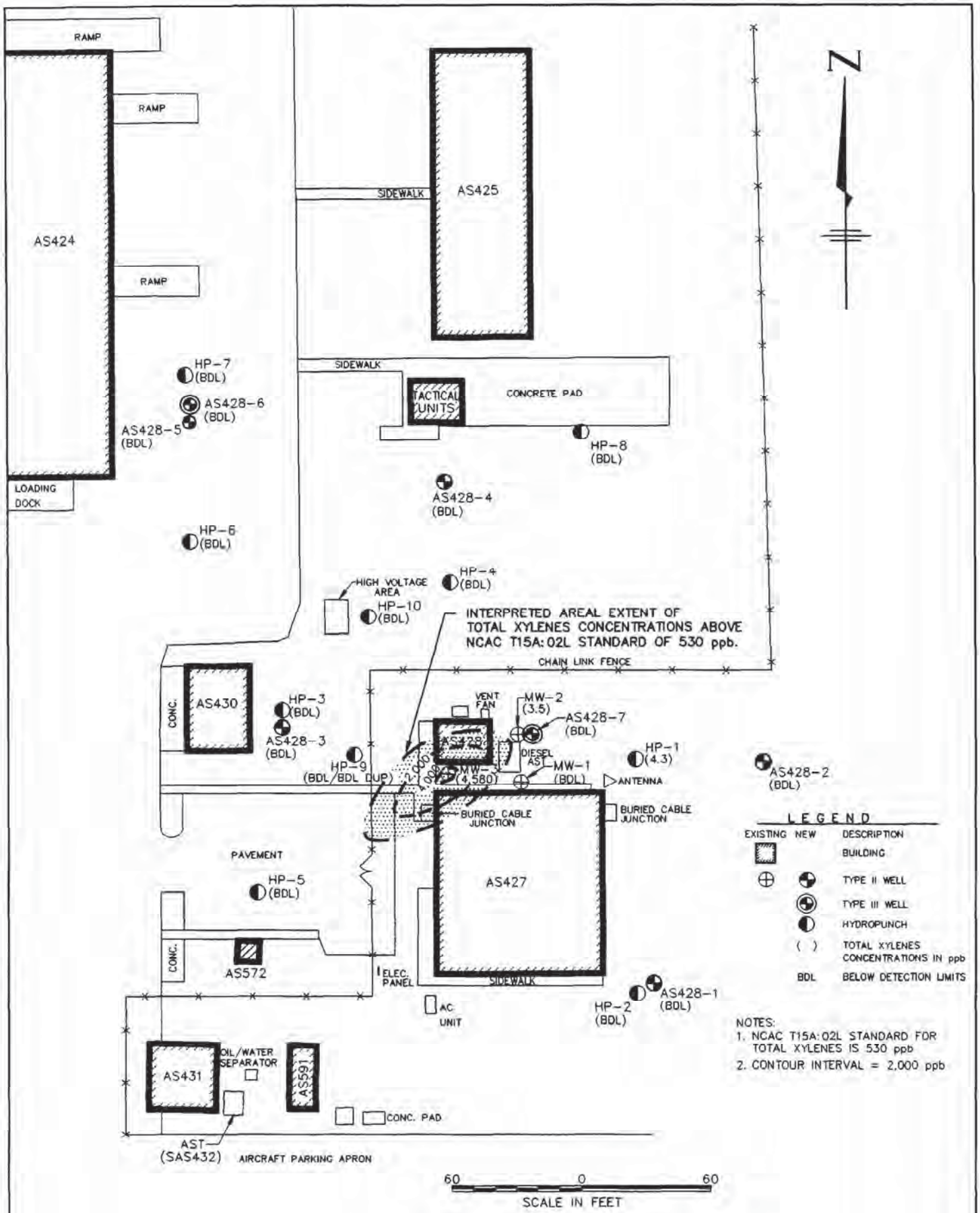
Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS
RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC

PROJECT: BUILDING AS-428 MARINE CORPS AIR STATION NEW RIVER, N.C.

TITLE: ETHYLBENZENE CONCENTRATIONS (WATER) ISOPLETH MAP

FIGURE 5.6

JOB NO: 95045CSA | DATE: MAY 1996 | SCALE: 1"=60' | DRAWN BY: WHW | CHECKED BY: TP



Richard Callin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA CHARLOTTE, NC

PROJECT: BUILDING AS-428 MARINE CORPS AIR STATION NEW RIVER, N.C.

TITLE: TOTAL XYLENES CONCENTRATION (WATER) ISOPLETH MAP

FIGURE 5.7

JOB NO: 95045CSA | DATE: MAY 1996 | SCALE: 1"=60' | DRAWN BY: WHW | CHECKED BY: TP

UST AS510 (Catlin, 2007)

TABLE 4A
SUMMARY OF GROUNDWATER LABORATORY RESULTS

Name: AS-510

Date: February 2007

Analytical Method: EPA Method 602 + Xylenes

Well ID	Contaminant of Concern →		Benzene	Ethylbenzene	m/p-Xylene	o-Xylene	Remaining EPA Method 602 Compounds
	Sample ID	Date Collected					
2L GWQS GCL			1 5,000	550 84,500	530* 87,500*		Varies Varies
USTAS510-MW01	USTAS510-MW01	2/20/2007	5.79	7.01	3.77	<2.0	BQL

All results in micrograms per liter (ug/L).

* = Total Xylenes limit

BQL = Below Quantitation Limit

Shaded results indicate concentration above 2L GWQS.

TABLE 4B SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: February 2007 Name: AS-510

Analytical Method: EPA Method 625

Well ID	Contaminant of Concern →		Acenaphthene	Fluorene	Naphthalene	Phenanthrene	All Other Remaining EPA Method 625 Compounds
	Sample ID	Date Collected					
2L GWQS GCL			80 2,120	280 950	21 15,500	210 410	Varies Varies
USTAS510-MW01	USTAS510-MW01	2/20/2007	3.10 J	4.90 J	10.6	4.50 J	BQL

BQL = Below Quantitation Limit

All results in micrograms per liter (ug/L).

J = Below calibration limit, concentration is an estimated value

TABLE 4C SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: February 2007

Name: AS-510

Analytical Method: MADEP VPH/EPH as compared to NCDENR 2L GWQS

Well ID	Hydrocarbon Fraction of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected				
GCL 2L GWQS			NE 420	NE 4,200	NE 42,000	NE 210
USTAS510-MW-01	USTAS510-MW-01	2/20/2007	<100	410	<100	<260 *

* The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

All results in micrograms per liter (ug/L).

Shaded results indicate concentration above 2L GWQS.

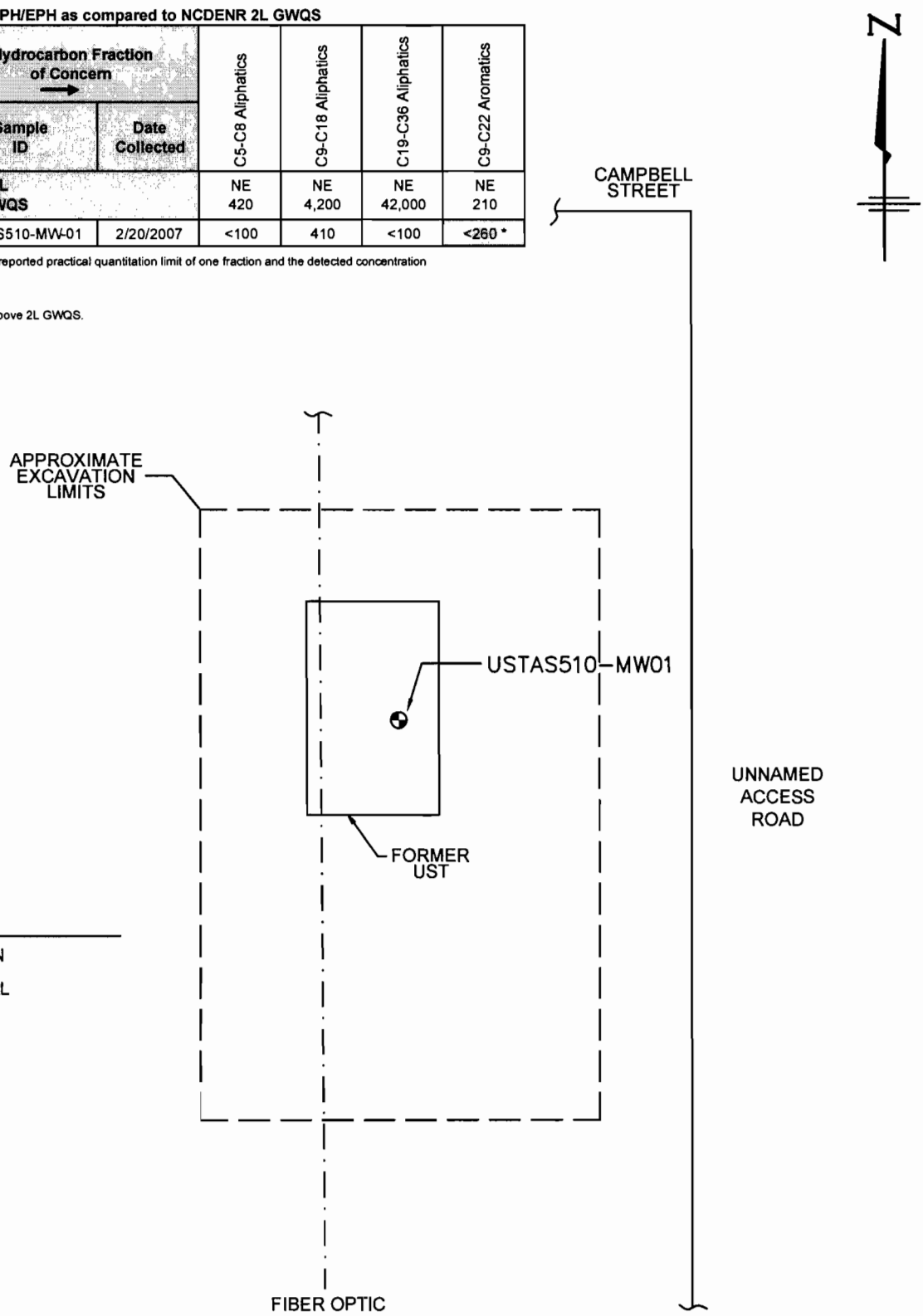
Analytical Method: MADEP VPH/EPH as compared to NCDENR 2L GWQS

Well ID	Hydrocarbon Fraction of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected				
GCL 2L GWQS			NE 420	NE 4,200	NE 42,000	NE 210
USTAS510-MW-01	USTAS510-MW-01	2/20/2007	<100	410	<100	<260 *

* The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

All results in micrograms per liter (ug/L).

Shaded results indicate concentration above 2L GWQS.



LEGEND

NEW	DESCRIPTION
⊕	TYPE II WELL

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. SITE SKETCH BASED ON FIELD SKECTH PROVIDED BY SOVEREIGN CONSULTING INC.

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT: AS-510 PHASE I LIMITED SITE ASSESSMENT MCAS, NEW RIVER, NC

TITLE: SITE PLAN WITH GROUNDWATER ANALYSIS RESULTS – MADEP VPH/EPH AS COMPARED TO NCDENR 2L GWQS

FIGURE 5

JOB NO: 205-077 | DATE: APRIL 2007 | SCALE: 1"=6' | DRAWN BY: KAWS | CHECKED BY: JAC

205077-AS-510-APRIL07-FIGURE5

Appendix B
Boring Logs and Well Construction Diagrams

Boring Logs

CH2MHILL

Boring Number: IR86-MW48, IR86-MW48IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10/30/07, 10/30/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						Asphalt	0	
	NA	HA	Full	NM		**Silty Sand (SM)** Tan fine silty sand	-5	Hand auger 0-5' bgs
5	SS-1	SS	100	NM		**Silty Sand (SM)** Light tan very fine to fine silty sand, loose, moist to wet	5 -7	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Clayey Sand (SC) Light grey slightly clayey sand, loose to med dense, wet	7	
10	SS-2	SS	25	NM		Wood and tree roots	-11 11	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.3
						Sand (SW) Light grey fine to medium sand		
15	SS-3	SS	100	NM		**Sand (SP)** Light tan medium sand, wet, medium dense	-15 15	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
20							-20 20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

CH2MHILL

Boring Number: IR86-MW48, IR86-MW48IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10/30/07, 10/30/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SP)** Same as above	-21 21	
						Sand (SP) Dark grey medium sand, medium dense, wet	-22 22	Sulfur odor
25	SS-5	SS	0	NM		**No recovery**	-25 25	
30	SS-6	SS	50	NM		**Sand (SP)** Tan medium sand, medium dense, wet	-31 31	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SW) Tan medium coarse sand, shell fragments, wet, loose		
35	SS-7	SS	100	NM		**Sand (SW)** Same as above	-35 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.3
						Clayey Sand (SC) Very light tan partially cemented sand grading to clayey sand, med. stiff	-36 36	
40							-40 40	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.2

CH2MHILL

Boring Number: IR86-MW48, IR86-MW48IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10/30/07, 10/30/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Silty Sand (SM)** Tan silty sand, fin e to medium sand with trace shell fragments, wet		
45	SS-9	SS	100	NM		**Sand (SW)** Light grey fine to medium sand, wet, medium dense	-45 / 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.3
						Silty Sand (SM) Light grey silty sand, medium dense, wet	-46 / 46	
50	SS-10	SS	100	NM		**Silty Sand (SM)** Same as above	-50 / 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.3
						End of Log	-52 / 52	
55								
60								

Boring Number: IR86-MW43IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10-31-07; 1000/1400

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						Asphalt	0	
	NA	HA	Full	NM		**Silty Sandy Clay (CL)** Gray silty sandy clay	-5	Hand auger 0 to 5 ft bgs
5	SS-1	SS	100	NM		**Sandy Clay (CL)** Light gray sandy clay, trace fine sand, damp to moist, med. stiff	5 -6	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sandy Clay (CL) Light gray sandy clay, soft, moist to wet	6	
10	SS-2	SS	100	NM		**Sand (SW)** Light gray f.-med. sand, wet, med. density	-10 10	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
							-12 12	
15	SS-3	SS	100	NM		**Sand (SW)** Same as above	-15 15	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9 Slight sulfur odor
20							-20 20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

Boring Number: IR86-MW43IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10-31-07; 1000/1400

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Same as above		Slight sulfur odor
25	SS-5	SS	100	NM		**Silty Sand (SM)** Light gray silty sand, f.-med. sand, soft to med. stiff	-25 25	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
30	SS-6	SS	100	NM		**Silty Sand (SM)** Same as above	-30 30	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sandy Clay (CL) White sandy clay with partially cemented sand clasts, ~50% clay, shell fragments present, sand clasts and shell fragments 5-20mm	-31 31 -32 32	
35	SS-7	SS	100	NM		**Clayey Sand (SC)** White clayey sand, with partially cemented sand clasts, clay ~30%, clasts and fragments primarily angular with some rounded (~3%)	-35 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
40							-40 40	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

Boring Number: IR86-MW43IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 10-31-07; 1000/1400

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Silty Sand (SM)** Light tan f-med. silty sand, med. density, trace shell fragments, wet	-41 41	
						Sand (SW) Light tan partially cemented sand, trace silty, wet, clasts ~20mm	-42 42	
						Silty Sand (SM) Light tan silty sand, f-med. sand, dense		
45	SS-9	SS	100	NM		**Silty Sand (SM)** Same as above	-45 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
50	SS-10	SS	100	NM		**Clayey Sand (SC)** Same as 35-37	-50 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						End of Log	-52 52	
55								
60								

Boring Number: IR86-MW50IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-1-07; 0820/1400

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						Asphalt	0	
	NA	HA	Full	NM		**Silty Sand (SM)** Tan fine silty sand clayey sand	-5	Hand auger 0 to 5 ft bgs
5	SS-1	SS	100	NM		**Clay (CL)** Light gray sandy silty clay, moist, med. plasticity, med. stiff to stiff	5 -7	CO=0, LEL=0, VOC=5, H2S=0, Oxy=20.9
							7	
10	SS-2	SS	100	NM		**Clay (CL)** Same as above	-10 10	CO=0, LEL=0, VOC=4, H2S=0, Oxy=20.9
15	SS-3	SS	100	NM		**Sand (SP)** Light gray med. sand, med. dense, wet	-15 15 -16	CO=0, LEL=0, VOC=1.5, H2S=0, Oxy=20.9 Slight sulfur odor
						Clay (CL) Light gray clay	16	
						Sand (SW) Light gray med.-coarse sand, loose, wet, qtz. fragments up to 20mm		
20							-20 20	CO=0, LEL=0, VOC=5, H2S=0, Oxy=20.9

Boring Number: IR86-MW50IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-1-07; 0820/1400

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SP)** Light greenish gray med. sand, med. dense, wet		Sulfur odor
25	SS-5	SS	100	NM		**Sitly Sand (SM)** Green f. -med sand with silt, trace shell fragments ~3%, wet, dense	-25 25	CO=0, LEL-6, VOC=5, H2S=0, Oxy=20.9 Slight odor
30	SS-6	SS	100	NM		**Silty Sandy Clay (CL)** Light gray to white silty clay w/partially cemented sand, wet, coarse sand ~30-50%, silt/clay ~50-70%	-30 30	CO=0, LEL=0, VOC=1, H2S=0, Oxy=20.9
35	SS-7	SS	100	NM		**Silty Sandy Clay (CL)** Same as above, clay content decreasing w/depth and partially cemented sand content increasing	-35 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
40								

Boring Number: IR86-MW50IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-1-07; 0820/1400

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	50	NM		**Silty Sandy Clay (CL)** Same as above	-41 41	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Silty Sand (SM) Tan silty sand w/trace shell fragments (~3%), dense		
45	SS-9	SS	100	NM		**Silty Sand (SM)** Tan partially cemented sand clasts and silt, some clasts 30-40mm, silt ~40%	-45 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
50	SS-10	SS	100	NM		**Silty Sand (SM)** Same as above **Silty Sand (SM)** White med. sand with silt, ~30% silt, wet	-50 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						End of Log		
55								
60								

Boring Number: IR86-MW44IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-2-07; 0805/1330

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	NA	HA	Full	NM			0	Hand auger 0 to 5 ft bgs
5	SS-1	SS	100	NM		**Sandy Silty Clay (CL)** Light gray sandy silty clay, moist, med. stiff	-5 5	
						Sandy Clay (CL) Dark gray sandy clay, moist, soft, sand ~30%	-6 6	CO=0, LEL=0, VOC=25, H2S=0, Oxy=20.9
						Silty Sand (SM) Light gray silty sand, soft, wet		
10	SS-2	SS	100	NM		**Sand (SW)** Light gray f.-med. sand with trace green sand, med. dense, wet, trace biotite grains	-10 10	CO=0, LEL=0, VOC=4, H2S=0, Oxy=20.9 Sulfur odor
15	SS-3	SS	100	NM		**Sand (SW)** Same as above	-15 15	CO=0, LEL=0, VOC=1, H2S=0, Oxy=20.9
20							-20 20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

Boring Number: IR86-MW44IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-2-07; 0805/1330

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Same as above		
25	SS-5	SS	100	NM		**Silty Sand (SM)** Olive gray silty sand with trace clay, wet, dense	-25 25	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
30	SS-6	SS	100	NM		**Silty Sand (SM)** White silty sand w/ paritially cemented sand, med. dense, clasts ~60%, subangular to subround, 10-20mm	-30 30	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
35	SS-7	SS	100	NM		**Silty Sand (SM)** Same as above, clasts generally less than 10mm	-35 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
40							-40 40	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

Boring Number: IR86-MW44IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in. HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-2-07; 0805/1330

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Sand (SW)** Gray fine-med. sand, wet, med. dense	-41 41	
						Silty Sand (SM) Partially cemented sand/ silty sand	-42 42	
						Sand (SW) Light tan very fine sand, with trace silt, some shell fragments and clasts (~1%), med. dense, wet		
45	SS-9	SS	100	NM		**Sand (SP)** Same as above	-45 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
50	SS-10	SS	100	NM		**Sand (SP)** Same as above	-50 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SW) White partially cemented sand w/trace silt, hard, sand clasts ~80% and 10-30mm in size	-51 51	
						End of Log		
55								
60								

CH2MHILL

Boring Number: IR86-MW49DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/B.Sprouse
Start/Finish Date: 11/5/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Asphalt**	0	Hand Auger 0-5 ft bgs
	NA	HA	Full	NM		**Silty Sand (SM)** Tan/Dark brown silty fine sand, loose, moist	-3	
						Sandy Clay (CL) Black fine sandy clay, soft, moist	3	
						Silty Sand (SM) Tan silty fine sand, loose to medium dense, moist, low plasticity, trace clay	-5	
5							5	
							-10	
10	SS-1	SS	17	NM		**Silty Sand (SM)** Tan/orange silty very fine to fine sand, trace clay and gravel, loose, wet	10	CO=0, LEL=0, VOC=0.6, H2S=0, OXY=20.9
							-12	
							12	
							-15	
15	SS-2	SS	58	NM		**Silty Sand (SM)** Tan/orange silty very fine to fine sand, trace clay and gravel, loose, wet	15	CO=1, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Sand (SP) Tan very fine to fine sand, loose, wet	-17 17	
						Silty Sand (SM) Tan/orange silty very fine to fine sand, trace clay and gravel, loose, wet		
							-20	
20							20	

CH2MHILL

Boring Number: IR86-MW49DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/B.Sprouse
Start/Finish Date: 11/5/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-3	SS	83	NM		**Sand (SP)** Grey very fine to fine sand, loose, sulfur odor, wet	-22	CO=6, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							22 -25	
25	SS-4	SS	25	NM		**Sand (SP)** Tan sand, loose, wet	25 -27	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Silty Sand (SM) Dark brown, silty sand, wet, slight sulfur odor, loose	27 -30	
30	SS-5	SS	75	NM		**Silty Sand (SM)** Dark grey silty very fine to fine sand, grain size increasing with depth, loose, shell fragments at 30-30.25 ft bgs, partially cemented sand in pea-marble size clasts from 31.5-32 ft bgs	30 -32	CO=14, LEL=3, VOC=0.0, H2S=0, OXY=20.9
							32 -35	
35	SS-6	SS	50	NM		**Partially Cemented Sand (SP)** Light tan/grey cemented fine sand, loose, wet, shell fragments	35 -37	
						Clay (CL) Tan/Grey clay, soft, medium plasticity, moist-wet	37	
						Partially Cemented Sand (SP) Light tan/grey cemented fine sand, loose, wet, shell fragments, trace fine gravel	-40	
40							40	

CH2MHILL

Boring Number: IR86-MW49DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/B.Sprouse
Start/Finish Date: 11/5/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-7	SS	100	NM		**Gravelly Sand (SP)** Grey fine gravelly fine sand, loose, wet, trace cemented sand clasts (up to coarse gravel size)	-42	CO=1, LEL=5, VOC=0.0, H2S=0, OXY=20.9
						Clayey Sand (SC) Grey clayey fine sand, loose, wet, low plasticity, some fine gravel	42 -45	
45	SS-8	SS	100	NM		**Silty Sand (SM)** Grey silty fine sand, few cemented sand clasts, increasing with depth, loose, shell fragments, wet	45 -47	CO=12, LEL=6, VOC=0.0, H2S=0, OXY=20.9
							47 -50	
50	SS-9	SS	100	NM		**Silty Sand (SM)** Tan with traces of red silty fine sand, wet, loose	50 -52	CO=1, LEL=7, VOC=0.0, H2S=0, OXY=20.9
							52 -55	
55	SS-10	SS	100	NM		**Silty Sand (SM)** Green/Grey silty fine to medium sand, trace clay, loose, wet, shell fragments, small cemented sand clasts, increase grain size and shell fragments with depth	55 -57	CO=12, LEL=7, VOC=0.0, H2S=0, OXY=20.9
							57 -60	
60							60	

CH2MHILL

Boring Number: IR86-MW49DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/B.Sprouse
Start/Finish Date: 11/5/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-11	SS	100	NM		**Sand (SW)** Grey fine to medium sand, loose, wet, trace silt/clay, shell fragments, increase grainsize with depth	-62	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							62 -65	
65	SS-12	SS	100	NM		**Silty Sand (SM)** Green/grey silty very fine sand, medium dense, moist, white shell fragments	65 -67	CO=12, LEL=0, VOC=0.0, H2S=0, OXY=20.9
70							67 -72	
	SS-13	SS	100	NM		**Sand (SP)** Olive grey fine sand, medium dense to dense, wet	72 -74	CO=11, LEL=0, VOC=0.0, H2S=0, OXY=20.9
75							74 -77	
	SS-14	SS	100	NM		**Sand (SP)** Same as above	77 -79	CO=5, LEL=0, VOC=0.0, H2S=0, OXY=20.9
80							79	

CH2MHILL

Boring Number: IR86-MW49DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/B.Sprouse
Start/Finish Date: 11/5/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-82	
	SS-15	SS	100	NM		**Sand (SP)** Light grey medium sand, medium dense, wet **Sand (SP)** Olive grey fine to medium sand, medium dense, wet	82 -84	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
85							84 -87	
	SS-16	SS	100	NM		**Sand (SP)** Olive grey fine to medium sand, medium dense, wet	87 -89	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=21.2
90							89 -92	
	SS-17	SS	100	NM		**Sand (SP)** Olive grey fine to medium sand, medium dense, wet	92 -95	CO=31, LEL=0, VOC=0, H2S=0, OXY=20.9
95						End of Log	95	
100								

CH2MHILL

Boring Number: IR86-MW47, IR86-MW47IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/6/07, 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						Concrete	0	
							-1	Hand auger 0 to 5 ft bgs
						Silty Sand (SM) Tan fine silty sand	1	
	NA	HA	Full	NM				
							-5	
5						**Sand (SP)** Tan/yellow-orange fine sand, trace silt	5	
							-6	
	SS-1	SS	100	NM		**Organic Sandy Silty Clay (OL)** Dark grey sandy silty clay, slight odor, moist, medium plasticity	6	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
							-7	
							7	
10								CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-2	SS	50	NM			-11	
						Clay (CL) Olive grey silty clay, med. plasticity, soft	11	
						Sand (SW) Light grey fine to medium sand with trace green sand, medium dense, wet, loose		
15							-15	
						Sand (SW) Same as above	15	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-3	SS	100	NM				
20							-20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
							20	

CH2MHILL

Boring Number: IR86-MW47, IR86-MW47IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/6/07, 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Same as above		
25	SS-5	SS	100	NM		**Sand (SW)** Same as above	-25 / 25	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
30	SS-6	SS	100	NM		**Sand (SW)** Same as above	-30 / 30	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Silty Sand (SM) Olive grey to light grey silty sand, very fine to fine sand, trace clay	-32 / 32	
35	SS-7	SS	100	NM		**Silty Sand (SM)** Green and tan fine silty sand with trace clay, banded, soft	-35 / 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sandy Clay (SC) White partially cemented sand and clay, 60% clay, sand clasts <10mm, shell fragments, stiff	-36 / 36	
							-37 / 37	
40							-40 / 40	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

CH2MHILL

Boring Number: IR86-MW47, IR86-MW47IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/6/07, 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Sand (SW)** Greensih tan fine to medium sand with trace shell fragments, loose to medium dense, wet	-41 / 41	
						Silty Sand (SM) Tan silty sand, fine to medium sand with trace shell fragments, wet	-42 / 42	
45	SS-9	SS	100	NM		**Sand (SP)** Tan fine sand, trace shell fragments, medium dense to hard	-45 / 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
50	SS-10	SS	100	NM		**Silty Sand (SM)** Light grey silty clayey sand, trace shell fragments, wet	-50 / 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SW) Light grey medium to coarse sand, loose, shell fragments, wet	-52 / 52	
						End of Log		
55								
60								

CH2MHILL

Boring Number: IR86-MW40

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-07-07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Topsoil**	0	Hand Auger 0-5 ft bgs
	NA	HA	Full	NM		**Silty Sand (SM)** Brown silty sand, trace clay, loose-med dense, moist	-5	
5							5	
							-10	
10	SS-1	SS	58	NM		**Silty Sand (SM)** Tan-grey silty v. fine sand, loose, wet, low plasticity	10	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							-12	
							12	
							-15	
15	SS-2	SS	100	NM		**Sand (SP)** Grey well sorted med sand, loose, wet	15	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							-17	
							17	
							-20	
20							20	

CH2MHILL

Boring Number: IR86-MW40

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-07-07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-3	SS	100	NM		**Sand (SP)** Same as above	-22	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							22 -25	
25	SS-4	SS	100	NM		**Silty Sand (SM)** Green/Grey silty v. fine sand, wet, low plasticity, loose, trace clay	25 -26	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Sand (SW) Light grey partially cemented fine-med. sand, med. dense, pebble size cemented clasts (10-15%), small shell fragments, wet	26 -27	
							27 -30	
30	SS-5	SS	100	NM		**Gravelly Sand (SW)** Light grey, partially cemented sand (60%), fine-coarse sand, fine gravel, med dense, wet	30 -32	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						End of Log	32	
35								
40								

Boring Number: IR86-MW41

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-7-07; 1020/1200

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						Concrete	0	
							-1	Hand auger 0 to 5 ft bgs
						Silty Sand (SM) Tan silty sand	1	
	NA	HA	Full	NM				
5							-6	
	SS-1	SS	75	NM		**Silty Sand (SM)** Yellow orange silty sand with trace clay, soft	6	CO=1, LEL=0, VOC=0, H2s=0, Oxy=20.9
						Sand (SW) White f.-med. sand, medium dense, wet, trace fines	-7 / 7	
						Sand (SP) Yellow orange fine sand, loose to medium dense, very well sorted		
10								CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-2	SS	75	NM		**Sand (SP)** Light tan fine sand, wet, medium density, very well sorted	-11 / 11	
15							-15	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-3	SS	100	NM		**Sand (SP)** Same as above	15	
						Sand (SW) Light gray fine-med. sand with trace green sand, loose to med. density, wet	-17 / 17	
20							-20 / 20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

Boring Number: IR86-MW41

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-in HSA
Sampling Method: Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11-7-07; 1020/1200

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Same as above	-21	
						Silty Clayey Sand (SC) Olive gray silty clayey sand, medium stiff, wet	21	
25	SS-5	SS	100	NM		**Silty Clayey Sand (SC)** Same as above	-25 25 -26	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Clayey Sand (SC) White clayey sand w/ partially cemented sand clasts, clay ~20%, shell fragments and sand clasts are 10-20mm, loose, wet	26 -27 27	
30	SS-6	SS	100	NM		**Clayey Sand (SC)** White sandy clay with partially cemented sand clasts, clay ~60%	-30 30 -32	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						End of Log	32	
35								
40								

CH2MHILL

Boring Number: IR86-MW39

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	NA	HA	Full	NM		**Clayey Sand (SC)** Dark brown/Black clayey fine sand, low-med plasticity, loose/soft, moist-wet.	0 -5	Hand Auger 0-5 ft bgs
5	SS-1	SS	42	NM		**Silty Sand (SM)** Dark brown to Tan, silty v. fine sand, loose, low plasticity, wet, organic debris, roots and wood	5 -7	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							7 -10	
10	SS-2	SS	100	NM		**Sand (SP)** Grey v. fine sand, wet, loose	10 -12	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							12 -15	
15	SS-3	SS	100	NM		**Sand (SP)** Grey fine sand, wet, loose, organic debris, wood (2%), pebble size clay clasts (CL-CH), light green soft, med plasticity	15 -17	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							17 -20	
20							20	

CH2MHILL

Boring Number: IR86-MW39

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SP)** As 15-17 ft bgs	-21 21	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Sand (SW) Green/Grey v. fine-fine sand, trace silt, loose, wet, 2% m-c sand/shell fragments	-22 22	
25							-25	
	SS-5	SS	100	NM		**Silty Sand (SM)** Dark green, silty v. fine-med. sand, loose, wet, low plasticity	25 -27	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							27	
30							-30	
	SS-6	SS	100	NM		**Sandy Gravel (GW)** Grey v.fine-fine sandy fine-coarse gravel, loose, wet, gravel consists of shell fragments, cemented sand clasts and rock fragments (60%)	30 -32	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						End of Log	32	
35								
40								

CH2MHILL

Boring Number: IR86-MW42IW, IR86-MW42DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07, 11/13/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	NA	HA	Full	NM		**Silty Sand (SM)** Tan/Grey silty fine sand, trace clay, medium dense, moist-wet	0 -5	Hand Auger 0-5 ft bgs
5	SS-1	SS	50	NM		**Silty Sand (SM)** Grey (orange mottling), silty fine sand, loose, wet	5 -7	CO=0, LEL=0, VOC=0.1, H2S=0, OXY=20.9
							7 -10	
10	SS-2	SS	100	NM		**Sand (SP)** Grey very fine sand, loose, wet	10 -12	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							12 -15	
15	SS-3	SS	100	NM		**Sand (SP)** Green/Grey very fine sand, loose, wet	15 -17	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							17 -20	
20							20	

CH2MHILL

Boring Number: IR86-MW42IW, IR86-MW42DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07, 11/13/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Green/Grey very fine to fine sand, loose, wet	-22	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							22 -25	
25	SS-5	SS	100	NM		**Sand (SW)** Same as above	25 -27	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Silty Sand (SM) Green/Grey silty fine sand, loose, wet	27 -30	
30	SS-6	SS	100	NM		**Sand (SW)** Green/Grey very fine to fine sand, loose, wet	30 -31	CO=0, LEL=0, VOC=0.1, H2S=0, OXY=20.9
						Silty Sand (SM-SC) Green silty fine sand, trace clay, wet, medium dense, thin dark brown laminations	31	
						Clayey Sand (SC) Off white clayey fine to medium sand/shell fragments, medium dense, medium plasticity, wet to moist	-35	
35	SS-7	SS	100	NM		**Silty Sand (SM-SC)** Green silty fine sand trace clay, wet, medium dense, thin dark brown laminations	35 -37	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
						Silty Sand (SM) Tan silty fine sand/shell fragments, trace clay, medium dense, fine gravel size cemented sand clasts (20%), moist	37 -40	
40							40	

CH2MHILL

Boring Number: IR86-MW42IW, IR86-MW42DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07, 11/13/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Silty Sand (SM)** Dark green, silty fine sand, trace clay, cemented sand (10%), small white shell fragments (5%), medium dense, wet	-42	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							42 -45	
45	SS-9	SS	100	NM		**Sandy Gravel (GW)** Grey fine to coarse sandy fine to medium gravel, loose, wet, trace pebble size cemented sand clasts, shell and fossiliferous limestone fragments	45 -47	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							47 -50	
50	SS-10	SS	92	NM		**Sandy Gravel (GW)** Same as above	50	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							-55	
55	SS-1	SS	100	NM		**Sand (SW)** White coarse sand with partially cemented sand clasts, loose, wet, clasts 1-20 mm, very few fines	55 -56 56	CO=0, LEL=0, VOC=0, H2S=0, Ocy=20.9
						Sand (SP) Olive grey fine sand, medium dense to dense, wet, few shell fragments	-60	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
60							60	

CH2MHILL

Boring Number: IR86-MW42IW, IR86-MW42DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07, 11/13/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-2	SS	100	NM		**Sand (SP)** Same as above	-61 61	
						Silty Sand (SM) White silty sand, trace clay, fine to medium grain sand, wet, some shell fragments and trace cemented sand fragments		
65	SS-3	SS	100	NM		**Sand (SP)** Olive grey fine sand, wet, medium dense to dense	-65 65	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
70	SS-4	SS	100	NM		**Sand (SP)** Olive grey fine sand, medium dense, wet	-72 72	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
75	SS-5	SS	100	NM		**Sand (SP)** Same as above	-77 77	
80								

CH2MHILL

Boring Number: IR86-MW42IW, IR86-MW42DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11-08-07, 11/13/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-82	
	SS-6	SS	100	NM		**Sand (SP)** Same as above	82	CO=15, LEL=0, VOC=0, H2S=0, Oxy=20.9
85								
							-87	
	SS-7	SS	100	NM		**Sitly Sand (SM)** Olive grey sitly sand, trace clay from 87-87.5' bgs, wet, medium density	87	CO=2, LEL=0, VOC=0, H2S=0, Oxy=20.9
90								
							-92	
	SS-8	SS	100	NM		**Sand (SP)** Greenish grey fine sand, trace silty, wet, medium dense to dense	92	CO=1, LEL=0, VOC=0, H2S=0, Oxy=20.9
							-94	
						End of Log	94	
95								
100								

CH2MHILL

Boring Number: IR86-MW46IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11/9/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0							0	Hand auger 0-5' bgs
	NA	HA	Full	NM				
							-5	
5	SS-1	SS	8	NM		**Clayey Sand (SC)** Dark brown clayey fine sand, loose, medium plasticity, moist	5	
							-7	
							7	
							-10	
10	SS-2	SS	100	NM		**Sand (SP)** Green-grey very fine sand, loose, wet	10	
							-12	
							12	
							-15	
15	SS-3	SS	100	NM		**Sand (SP)** Same as above	15	
							-17	
							17	
							-20	
20							20	

CH2MHILL

Boring Number: IR86-MW46IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11/9/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SP)** Green-grey very fine sand, loose, wet	-21	
						Sand (SW) Dark grey very fine to fine sand, trace silt, loose, wet	21 -22	
							22 -25	
25	SS-5	SS	100	NM		**Silty Sand (SM)** Dark grey, silty very fine to medium sand, medium dense, moist to wet	25 -27	
							27 -30	
30	SS-6	SS	100	NM		**Gravelly Sand (SW)** Light grey fine to medium gravelly very fine to coarse sand, loose, wet, gravel(30-40%) consists of cemented sand, shell and rock fragments	30 -32	
							32 -35	
35	SS-7	SS	100	NM		**Gravelly Clay (CL)** Light grey fine to medium gravelly clay with fine to coarse sand, soft, low plasticity, gravel(25%) consists of cemented sands, shell and rock fragments	35 -37	
							37 -40	
40							40	

CH2MHILL

Boring Number: IR86-MW46IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must/RDU
Start/Finish Date: 11/9/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Gravelly Sand (SW)** Light grey, fine to medium gravelly fine to coarse sand, loose, wet, trace silt and clay	-41 41	
						Sand (SW) Light grey very fine to coarse sand, trace silt and clay, trace fine gravel, cemtented sands/ shell fragments (10%)	-42 42	
45							-45	
	SS-9	SS	100	NM		**Silty Sand (SM)** Green silty very fine sand, dense, moist, white shell fragments (5%)	45 -47	
							47	
50							-50	
	SS-10	SS	100	NM		**Gravelly Sand (SW)** Light grey fine to medium gravelly very fine to coarse sand, loose, wet, gravel(30-40%) consists of cemented sand, shell and rock fragments	50 -52	
						End of Log	52	
55								
60								

CH2MHILL

Boring Number: IR86-MW51DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must, B.Sprouse
Start/Finish Date: 11/16/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Topsoil** Brown, moist	0 -1	Hand Auger 0-5 ft bgs
	NA	HA	Full	NM		**Silty Sand (SM)** Tan silty sand, loose, moist	1 -3	
						Clay (CL) Dark brown clay, some silt, soft, moist, low plasticity	3 -5	
5						**Clay (CL)** Grey clay, soft, medium plasticity, moist	5 -10	
10	SS-1	SS	100	1-2-2-1		**Sandy Clay (SC-CL)** Grey very fine sandy clay, wet, very soft to soft, some roots	10 -12	CO=0, LEL=3, VOC=2.4, H2S=0, OXY=20.9
							12 -15	
15	SS-2	SS	100	8-7-10-17		**Organic Silty Clay (OL)** Dark brown, silty clay, organic debris and odor, very soft, low plasticity, wet	15 -16	CO=1, LEL=5, VOC=0.0, H2S=0, OXY=20.9
						Sand (SP) Grey very fine sand, wet, loose	16 -17 17 -20	
20							20	

CH2MHILL

Boring Number: IR86-MW51DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must, B.Sprouse
Start/Finish Date: 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-3	SS	83	6.8-9-13		**Sand (SP)** Grey very fine sand, wet, loose	-22	CO=4, LEL=6, VOC=0.0, H2S=0, OXY=20.9
						Sand (SP) Grey medium quartz sand, loose, wet	22	
25						**No Recovery**	-25 25	
	SS-4	SS	0	NM			-27	
							27 -30	
30	SS-5	SS	63	NM		**Clayey Sand (SC)** Dark grey clayey fine sand, loose, low plasticity, wet	30 -32	CO=0, LEL=7, VOC=0.0, H2S=0, OXY=30
							32 -35	
35	SS-6	SS	100	NM		**Clayey Sand (SC)** Grey clayey fine to coarse sand, med plasticity, trace fossiliferous limestone pebbles, wet	35 -37	CO=0, LEL=4, VOC=0.0, H2S=0, OXY=20.9
						Gravelly Sand (SW) Grey fine gravelly coarse sand, loose, wet	37	
						Clayey Sand (SC) Grey clayey fine to coarse sand, medium plasticity, trace fossiliferous limestone pebbles, wet	-40	
40							40	

CH2MHILL

Boring Number: IR86-MW51DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must, B.Sprouse
Start/Finish Date: 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-7	SS	83	NM		**Gravelly Sand (SP)** Grey gravelly coarse sand, loose, wet	-42	CO=0, LEL=4, VOC=0.0, H2S=0, OXY=20.9
							42 -45	
45	SS-8	SS	100	NM		**Silty Sand (SM)** Grey silty fine sand, few pea-marble size cemented sand clasts, loose to medium dense, small shell fragments, wet	45 -47	CO=0, LEL=7, VOC=0.0, H2S=0, OXY=20.9
							47 -50	
50	SS-9	SS	75	NM		**Silty Sand (SM)** Grey silty fine sand, few pea to marble size cemented sand clasts, loose to medium dense, small shell and fossiliferous limestone fragments, wet	50 -52	CO=0, LEL=4, VOC=0.0, H2S=0, OXY=21.1
							52 -55	
55	SS-10	SS	75	NM		**Partially Cemented Sand (SW)** Grey fine to coarse sand cemented in fine to coarse gravel size clasts, wet	55 -57	CO=0, LEL=4, VOC=0.0, H2S=0, OXY=20.9
							57 -60	
60							60	

CH2MHILL

Boring Number: IR86-MW51DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must, B.Sprouse
Start/Finish Date: 11/16/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-11	SS	75	NM		**Silty Gravel (GM)** Grey, silty fine gravel, trace clay, loose, wet	-62	CO=0, LEL=4, VOC=0.0, H2S=0, OXY=21.1
						Silty Sand (SM) Green/grey silty fine sand, loose, wet	62 -65	
65	SS-12	SS	100	NM		**Silty Sand (SM)** Greenish grey silty sand, loose, low plasticity, moist, some shell fragments	65 -67	CO=23, LEL=3, VOC=0.0, H2S=0, OXY=21.1
70							67 -72	
	SS-13	SS	100	NM		**Sand (SP)** Gray fine to medium sand, wet, medium dense **Sand (SP)** Light tan fine sand, wet, medium dense to dense	72 -73 73 -74	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
75							74 -77	
	SS-14	SS	95	NM		**Sand (SP)** Gray fine sand, well sorted, wet, medium dense	77 -79	
80							79	

CH2MHILL

Boring Number: IR86-MW51DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA
Sampling Method: 24-inch Split Spoon
Logged by: E. Must, B.Sprouse
Start/Finish Date: 11/16/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-82	
	SS-15	SS	100	NM		**Sand (SP)** Olive gray-brown fine sand, well sorted, stiffness increases with depth, medium dense	82 -84	
85							84 -87	
	SS-16	SS	100	NM		**Sand (SP)** Same as above	87 -89	
90							89 -92	
	SS-17	SS	100	NM		**Sand (SP)** Same as above	92 -95	
95						End of Log	95	
100								

CH2MHILL

Boring Number: IR86-MW44IW, IR86-MW44DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA, Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/2/07, 11/17/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0							0	
	NA	HA	Full	NM				Hand auger 0-5' bgs
5							-5 5	
	SS-1	SS	100	NM		**Sandy Silty Clay (CL)** Light grey sandy silty clay, moist, medium stiff	-6 6	CO=0, LEL=0, VOC=25, H2S=0, Oxy=20.9
						Sandy Clay (CL) Dark grey sandy clay, moist, soft, sand 30%		
						Silty Sand (SM) Light grey silty sand, soft, wet		
10	SS-2	SS	100	NM		**Sand (SW)** Light grey fine to medium sand with trace green sand, medium dense, wet, trace biotite grains	-10 10	CO=0, LEL=0, VOC=4, H2S=0, Oxy=20.9 Sulfur odor
15	SS-3	SS	100	NM		**Sand (SW)** Same as above	-15 15	CO=0, LEL=0, VOC=1, H2S=0, Oxy=20.9
20							-20 20	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

CH2MHILL

Boring Number: IR86-MW44IW, IR86-MW44DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA, Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/2/07, 11/17/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-4	SS	100	NM		**Sand (SW)** Same as above		
25	SS-5	SS	100	NM		**Silty Sand (SM)** Olive grey silty sand with trace clay, wet, dense	-25 25	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
30	SS-6	SS	100	NM		**Silty Sand (SM)** White silty sand with paritially cemented sand, medium dense, clasts 60%, subangular to subround, 10-20mm	-30 30	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
35	SS-7	SS	100	NM		**Silty Sand (SM)** Same as above, clasts generally less than 10mm	-35 35	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
40							-40 40	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

CH2MHILL

Boring Number: IR86-MW44IW, IR86-MW44DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA, Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/2/07, 11/17/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-8	SS	100	NM		**Sand (SW)** Grey fine to medium sand, wet, medium dense	-41 41	
						Silty Sand (SM) Partially cemented sand/ silty sand		
						Sand (SW) Light tan very fine sand, with trace silt, some shell fragments and clasts (1%), medium dense, wet		
45	SS-9	SS	100	NM		**Sand (SP)** Same as above	-45 45	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
50	SS-10	SS	100	NM		**Sand (SP)** Same as above	-50 50	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SW) White partially cemented sand with trace silt, hard, sand clasts 80% and 10-30mm in size	-51 51	
55	SS-1	SS	100	NM		**Silty Sand (SM)** Tan fine to medium grain sitly sand, a few coarse grain sand clasts, medium dense, wet	-55 55	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SP) Olive grey fine sand, medium dense, wet	-56 56	
60							-60 60	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9

CH2MHILL

Boring Number: IR86-MW44IW, IR86-MW44DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA, Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/2/07, 11/17/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-2	SS	100	NM		**Sand (SP)** Same as above		
65	SS-3	SS	100	NM		**Silty Sand (SM)** Olive grey silty sand with trace clay, medium dense, wet	-65 65	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sand (SP) Olive grey fine sand, dense to hard, wet	-67 67	
70	SS-4	SS	100	NM		**Sand (SP)** Olive grey very fine sand, wet, dense	-72 72	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.2
75	SS-5	SS	100	NM		**Sand (SP)** Same as above	-77 77	CO=0, LEL=0, VOC=0, H2S=0, Oxy=21.1
80								

Boring Number: IR86-MW44IW, IR86-MW44DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25-inch HSA, Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/2/07, 11/17/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-82 / 82	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-6	SS	100	NM		**Sand (SP)** Same as above, medium density		
85							-87 / 87	CO=2, LEL=0, VOC=0, H2S=0, Oxy=21.1
	SS-7	SS	100	NM		**Sand (SP)** Same as above		
90							-92 / 92	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-8	SS	100	NM		**Sand (SP)** Same as above		
						End of Log	-94 / 94	
95								
100								

CH2MHILL

Boring Number: IR86-MW45DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/18/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Silty Sandy Clay (CL)** Tan silty sandy clay, soft, low plasticity	0	Hand auger 0 to 5 ft bgs
	NA	HA	Full	NM				
5								
	SS-1	SS	50	NM		**Silty Clayey Sand (SC)** Grey silty clayey sand, wet, clay 10%	-9 9	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
10						**Sand (SW)** Light grey fine to medium sand, trace green sand, wet, loose		
	SS-2	SS	50	NM		**Sand (SW)** Same as above	-13 13	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
15								
	SS-3	SS	75	NM		**Sand (SW)** Same as above	-18 18	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
20								

CH2MHILL

Boring Number: IR86-MW45DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/18/07

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-23 / 23	
	SS-4	SS	83	NM		**Sand (SW)** Same as above		CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
25								
							-28 / 28	
	SS-5	SS	100	NM		**Silty Clayey Sand (SC)** Dark olive grey silty clayey sand, soft, wet		CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
30								
							-33 / 33	
	SS-6	SS	100	NM		**Clayey Sand (SC)** Grey clayey sand, wet		CO=3, LEL=0, VOC=0, H2S=0, Oxy=20.9
						Sandy Clay (CL) Grey sandy clay, soft, wet, medium plasticity		
35						**Sandy Clay (CL)** White partially cemented sand and clay, wet, 60% clay, shell fragments and cemented sand clasts 10-20mm with size increasing with depth	-35 / 35	
							-38 / 38	
	SS-7	SS	83	NM		**Sandy Clay (CL)** Light tan sandy clay, wet, very soft, low to medium plasticity, clay80%, clasts <10mm		CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
							-40 / 40	
40								

CH2MHILL

Boring Number: IR86-MW45DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/18/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Silty Clayey Sand (SC) Light tan silty clayey sand, clay 40%		
							-43 43	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-8	SS	100	NM		**Silty Sand (SM)** Light olive gray silty sand, medium dense, 20-30% silt, wet, trace shell fragments		
45								
							-48 48	CO=4, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-9	SS	100	NM		**Sand (SW)** Olive grey fine sand, moist, medium dense, trace shell fragments		
50							-50 50	
							-53 53	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-10	SS	50	NM		**Sand (SW)** Same as above		
55								
								CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-11	SS	100	NM			-59 59	
						Sand (SP) Olive gray fine sand, moist, med. dense, trace shell fragments		
60								

CH2MHILL

Boring Number: IR86-MW45DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/18/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-63 / 63	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-12	SS	100	NM		**Silty Sand (SM)** Olive grey to tan silty sand, wet, medium dense to dense, 20% silt, trace shell fragments		
65								
							-68 / 68	CO=0, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-13	SS	100	NM		**Sand (SP)** Olive grey very fine sand, medium dense to dense, wet		
70								
							-72 / 72	CO=2, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-14	SS	100	NM		**Sand (SP)** Same as above		
75								
							-77 / 77	CO=10, LEL=0, VOC=0, H2S=0, Oxy=20.9
	SS-15	SS	100	NM		**Sand (SP)** Same as above		
80								

CH2MHILL

Boring Number: IR86-MW45DW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: Mud Rotary
Sampling Method: 24-inch Split Spoon
Logged by: B. Sprouse
Start/Finish Date: 11/18/07

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-16	SS	100	NM		**Sand (SP)** Same as above	-82 / 82	CO=10, LEL=0, VOC=0, H2S=0, Oxy=20.9
85	SS-17	SS	100	NM		**Sand (SP)** Same as above	-87 / 87	CO=3, LEL=0, VOC=0, H2S=0, Oxy=20.9
90	SS-18	SS	100	NM		**Sand (SP)** Same as above	-92 / 92	CO=6, LEL=0, VOC=0, H2S=0, Oxy=20.9
						End of Log	-94 / 94	
95								
100								

CH2MHILL

Well Number: MW-54IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method: 24 inch split spoon
Logged by: B. Sprouse
Start/Finish Date: 6/3/2008 0805-1800

Depth (ft)	Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
						Ground Surface	0		
0						**Asphalt**	0 -1		PID
	NA	HA	Full	NM		**Sand (SP)** Tan, medium density, fine grained, poorly graded, wet	1		Hand Auger 0' to 5'
5	SS-1	SS	18	NM					0.0
							-8		
	SS-2	SS	12	NM		**Sand (SP)** Light tan to light gray, medium density, fine grained, poorly graded, wet	8		0.0 slight sulfur odor
10							-13		
	SS-3	SS	24	NM		**Sand (SP)** Light tan to light gray, medium density, fine grained, poorly graded, wet	13		0.0 sulfur odor
15							-18		
	SS-4	SS	24	NM		**Sand (SP)** Light tan to light gray, medium density, fine grained, poorly graded,wet	18 -19		0.0
20						**Clayey Sand (SC)** Light tan, medium density, fine grained, poorly graded,wet	19 -23		
	SS-5	SS	24	NM		**Clayey Sand (SC)** Trace silt, dark olive gray, medium density, very fine grained,wet	23		
25									0.0 (ambient air)

CH2MHILL

Well Number: MW-54IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method: 24 inch split spoon
Logged by: B. Sprouse
Start/Finish Date: 6/3/2008 0805-1800

Depth (ft)	Sample Info: Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
							-28		
	SS-6	SS	0	NM		**N/A** No Recovery	28		
30									
	SS-7	SS	6	NM			-35		
35						**Clayey Sand (SC)** 34.5-34.8 Olive gray, trace partially cemented, fine grained,wet 34.8-35.0 White, trace partially cemented sand, trace shell fragments, medium grained, wet	35		0
							-38		
	SS-8	SS	0	NM		**N/A** No Recovery	38		
40									
							-43		
	SS-9	SS	0	NM		**N/A** No Recovery	43		
							-45		
45						End of Log	45		
50									

CH2MHILL

Well Number: MW-55IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method: 24 inch split spoon
Logged by: B. Sprouse
Start/Finish Date: 6/4/2008 0825-1400

Depth (ft)	Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
						Ground Surface	0		
0						**Asphalt**	0 / -1		PID
						Sand (SP) Tan	1 / -2		Hand Auger 0' to 5'
						Sandy Clay (CL) Dark gray	2 / -3		
						Sand (SP) Tan	3		
5									0.0
	SS-1	SS	6	NM			-7		
						Sandy Clay (CL) Trace silt, light gray, very fine grained, soft, moist	7 / -9		
	SS-2	SS	18	NM		**Sandy Clay (CH)** Dark gray, very fine grained, soft, medium plasticity, moist	9 / -10		0.0
10						**Clay (CH)** Light gray, very soft, high plasticity, moist/wet	10		
			14						
	SS-3	SS		NM			-14		0.0
						Sandy Clay (CL) Dark gray to tan, very fine grained, soft, low plasticity, wet	14		
15						**Sand (SP)** Tan, fine grained, poorly graded, medium density, wet			
	SS-4	SS	12	NM			-19		0.0
						Sand (SP) Tan, fine grained, poorly graded, medium density, wet	19		
20							-23		
	SS-5	SS		NM		**Sand (SP)** Light tan	23		
25									

CH2MHILL

Well Number: MW-55IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method: 24 inch split spoon
Logged by: B. Sprouse
Start/Finish Date: 6/4/2008 0825-1400

Depth (ft)	Sample Info: Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
30						**Sand (SP)** Light olive gray	-30 30		
35									
40									
45						**Clayey Sand (SC)** White, partially cemented. End of Log	-45 45		
50									

CH2MHILL

Well Number: MW-52

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method:
Logged by: B. Sprouse
Start/Finish Date: 6/5/2008 1820 - 2045

Depth (ft)	Sample Info: Sample Number	Sample Info: Sample Type	Sample Info: Recovery (in)	Sample Info: SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
						Ground Surface	0		
0						**Asphalt**	0		
						Sand (SP) Tan			PID Hand Auger 0' to 5'
5							-6		0.0 (ambient air)
						Sand (SP) Light gray, fine grained, poorly graded, moist	6		
10									0.0
15						Wet @ 15 ft.	-19		0.0
						Clayey Sand (SC) Brown, fine grained, wet	19		
20							-24		0.0
						Clayey Silty Sand (SM) Olive gray, fine grained, wet	24		
25							-30		0.0
30							30		

CH2MHILL

Well Number: MW-53

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method:
Logged by: B. Sprouse
Start/Finish Date: 6/5/2008 1325-1640

Depth (ft)	Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
						Ground Surface	0		
0						**Concrete**	0		
							-2		PID Hand Auger 1.5' to 5'
						Sand (SP) Tan	2		
						Sand Clay (CL) Dark gray	-4		
						Sand (SP) Tan	4		
5									0.0 (ambient air)
							-7		
						Clayey Sand (SC) Light gray, fine grained, wet	7		
10									0.0
15									0.0
20									
							-24		
						Sand (SP) Light gray, fine grained, poorly sorted, wet	24		
25									0.0
							-30		
30							30		

CH2MHILL

Well Number: MW-56IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 362251

Driller: American Env. Drilling
Drilling Method: 3.25" HSA / IR A300
Sampling Method:
Logged by: B. Sprouse
Start/Finish Date: 6/6/2008 1045-1350

Depth (ft)	Sample Number	Sample Type	Recovery (in)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
						Ground Surface	0		
0						**Gravel**	0		PID Hand Auger 0' to 5'
						Sand (SP) Tan, fine grained	-3		
						Clayey Sand (SC) Dark gray, fine grained, moist	3 -5		
5						**Sand (SP)** Tan	5		
10							-12		
						Sandy Clay (CL) Light gray, fine grained, soft, moist/wet	12		
15									0.0 (ambient air)
20									
25							-25		0.0 (ambient air)
						Sand (SP) Light gray, fine grained, wet	25		
30									
35									0.0 (ambient air)
40							-40		
						Clayey Sand (SC) White, partially cemented,shell fragments	40		
45							-45 45		

CH2MHILL

Boring Number: IR86-MW40, IR86-MW40IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must, B. Propst
Start/Finish Date: 11/07/07, 10/24/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Topsoil**	0	Hand Auger 0-5 ft bgs
	NA	HA	Full	NM		**Silty Sand (SM)** Brown silty sand, trace clay, loose-med dense, moist	-5	
5							5	
							-10	
10	SS-1	SS	58	NM		**Silty Sand (SM)** Tan-grey silty v. fine sand, loose, wet, low plasticity	10	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							-12	
							12	
							-15	
15	SS-2	SS	100	NM		**Sand (SP)** Grey well sorted med sand, loose, wet	15	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							-17	
							17	
							-20	
20							20	

CH2MHILL

Boring Number: IR86-MW40, IR86-MW40IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must, B. Propst
Start/Finish Date: 11/07/07, 10/24/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	SS-3	SS	100	NM		**Sand (SP)** Same as above	-22	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							22 -25	
25	SS-4	SS	100	NM		**Silty Sand (SM)** Green/Grey silty v. fine sand, wet, low plasticity, loose, trace clay **Sand (SW)** Light grey partially cemented fine-med. sand, med. dense, pebble size cemented clasts (10-15%), small shell fragments, wet	25 -26 26 -27	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
							27 -30	
30	SS-5	SS	100	NM		**Gravelly Sand (SW)** Light grey, partially cemented sand (60%), fine-coarse sand, fine gravel, med dense, wet	30	CO=0, LEL=0, VOC=0.0, H2S=0, OXY=20.9
35						Same as above with increased shell fragments	-35 35	
40							-40 40	

CH2MHILL

Boring Number: IR86-MW40, IR86-MW40IW

Client: NAVFAC
Project: Site 86
Location: MCAS- New River
Project Number: 362251

Driller: Parratt Wolff
Drilling Method: 4.25 inch HSA
Sampling Method: 24 inch Split Spoon
Logged by: E. Must, B. Propst
Start/Finish Date: 11/07/07, 10/24/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Sand (SW) Light grey, well graded, some partially weathered cemented sand clasts, loose, wet	-41 41	
						Clayey Sand (SC) Light grey, partially cemented sand clasts, loose to very dense, wet, clasts 10mm, abundant shell fragment, sand clasts dominant		
45						**Clayey Sand (SC)** Same as above	-45 45	
						Silty Sand (SM) Tan, very fine grained, very dense, wet	-47 47	
						End of Log		
50								
55								
60								

Boring Number: MW-41IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/25/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
20						No spoons collected from 0-25'		
25						**Sand (SW)** Tan, well graded, fine to medium grained, trace shell pieces, saturated, loose	-25 25	0.0 ppm
30						**Sand (SW)** Same as above	-30 30	
						Silty sand (SM) Tan, fine to medium grained, sautated, medium dense	-31 31	0.0 ppm
						Sandy clay (CL) Light gray, paritally cemented sand clasts, clay ~80%, clasts up to 10 mm, wet	-32 32	
35						No recovery	-35 35	
						Silty sand (SM) Olive gray, fine grained, dense, wet	-37 37	0.0 ppm
						Sandy clay (CL) Same as 31.8-32		
40								

CH2MHILL

Boring Number: MW-41IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/25/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-41	
						Sandy clay (CL) Light gray, partially cemented sand clasts, dense/hard, wet, clasts up to 10mm	41	0.0 ppm
							-42	
							42	
						Silty sand (SM) Tan, fine grained, very dense		
45								
							-47	
						End of Log	47	
50								
55								
60								

Boring Number: MW-53IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/26/08

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
20						No spoons collected from 0-25'		
							-25	
25						**Silty sand (SM)** Yellow-orange, fine grained, loose, trace gravel pieces	25 -26	
						Silty sand (SM) Olive gray, fine grained, loose/soft, wet	26	0.0 ppm
	DP-1	DP	80					
							-30	
30						No recovery	30	
						Clayey sand (SC) Light gray, partially cemented sand with shell fragments, clay ~5%, clasts <10mm, medium dense, saturated		0.0 ppm
	DP-2	DP	80					
							-35	
35						**Sand (SW)** Gray, medium dense, very fine to fine grained, well graded, trace shell fragments, saturated	35 -36	
						Silty sand (SM) Tan, partially cemented sand clasts, medium dense, clasts ~10mm	36	0.0 ppm
	DP-3	DP	100					
							-40	
40							40	

CH2MHILL

Boring Number: MW-53IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/26/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Sand (SW) Same as 35-36	-41	0.0 ppm
						Silty sand (SM) Tan, fine grained, dense, wet	41	
	DP-4	DP	80					
45							-45	
						Silty sand (SM) Same as above	45	0.0 ppm
						Sandy clay (CL) Light gray, partially cemented sand, hard, saturated, sand clasts <10mm	-47 47	
	DP-5	DP	100					
50							-50	
						No recovery	50	
						Silty sand (SM) Tan, very dense, wet, fine graine	-51 51	0.0 ppm
						Clayey sand (SC) Light fray, partially cemented sand, hard/dense, staurated		
						End of Log		
55								
60								

Boring Number: MW-52IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/27/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
20						No spoons collected from 0-25'		
							-25 / 25	
25						No recovery		
						Silty sand (SM) Dark gray, organic, fine grained, loose	-26 / 26	0.0 ppm
						Silty sand (SM) Olive gray, trace clay, very fine grained, soft, moist		
30						No recovery	-30 / 30	
						Silty sand (SM) Same as above	-31 / 31	0.0 ppm
						Sandy clay (CL) Light gray, partially cemented sand clasts, soft, low plasticity, saturated, clasts <10mm, abundant shell fragments		
35						**Silty sand (SM)** Olive gray, fine grained, medium dense, wet	-35 / 35	
						Silty clayey sand (SM) Tan, partially cemented sand clasts, saturated, medium dense, clasts <5% and ~5mm	-36 / 36	0.0 ppm
40							-40 / 40	

CH2MHILL

Boring Number: MW-52IW

Client: NAVFAC
Project: Site 86
Location: MCAS New River
Project Number: 370855

Driller: American Environmental
Drilling Method: 4.25" HSA
Sampling Method: Split Spoons
Logged by: B. Propst
Start/Finish Date: 10/27/08

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Sand (SW) Tan, well graded, fine to medium grained, trace shell fragments, dense, saturated	-41 / 41	0.0 ppm
						Silty sand (SM) Tan, trace partially cemented sand clasts, saturated, medium dense, fine grained	-42 / 42	
45						**Sand (SW)** Tan, well graded, fine to medium graied, trace shell fragments, dense, saturated	-45 / 45	
						Clayey sand (CL) Partially cemented sand clasts, tan grading to light gray, dense, pea-sized clasts and shell pieces	-47 / 47	
						End of Log		
50								
55								
60								

CH2MHILL

PROJECT NUMBER	BORING NUMBER 1R86-PTW1-	SHEET 1 OF 2

SOIL BORING LOG

PROJECT CTO-81 Site 86 LOCATION MCAS New River

ELEVATION Not surveyed DRILLING CONTRACTOR Ground water Protection

DRILLING METHOD AND EQUIPMENT Sonic Drill Co SR-2

WATER LEVELS ~8' at time of drilling START 10-27-09 1215 FINISH LOGGER KHowell / CLT

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		HA-1	5'	NA	Silty Sand (SM) Light gray, moist loose, fine to v fine grained sand (fill) 0-5'	
5					thin roots (0.5" dia) and cobbles (3") encountered @ 4.5'	
		SB-1	3.5'	NA	5-6' Silty sand (SM) tan brown with some gray, moist loose (fill) occasional asphalt chunks	
					6-10' silty sand (SM) gray to light gray, wet, m dense - small 4" clay lense @ 9.5'	
10					10-11' Sand (SW) gray, saturated m. dense	
		SB-2	4'	NA	11-13.5' sandy clay (CL) gray to d. gray m stiff, saturated	
					13.5-14.5' sand (SW) gray, saturated m dense - small shell fragments	
15					14.5-15' silty sand (SM), gray, saturated, m stiff, slight sulfur odor	
		SB-3	4.5'	NA	15-20' Sand (SP) gray, saturated slight grade from tan gray to gray from 15-20	
20						
		SB-3	4.5	NA	20-25' silty Sand (SM) gray to pale blue gray, saturated, m to dense	
25					25-28' Silty Sand (SM) gray to D. gray, saturated, m. dense to dense	
		SB-4	4.5	NA	28-30' Limestone (SP/SM) light gray saturated, shells, weakly cemented with clasts of lithofied limestone	
30						

CH2MHILL

PROJECT NUMBER	BORING NUMBER FR86-PTW1	SHEET 2	OF 2

SOIL BORING LOG

PROJECT CTO-81 Site 86 LOCATION MCAS New River

ELEVATION Not surveyed DRILLING CONTRACTOR Ground Water Protection

DRILLING METHOD AND EQUIPMENT Sonic Drill Co. SR-2

WATER LEVELS ~8 at time of drilling START 10-27-09 FINISH 10-27-09 LOGGER K Howell/CCT

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30		SB-5	4.5	NA	30-34 Limestone (SM) light gray to gray, saturated, shell fragments, slightly higher silt content, weakly cemented	
35		SB-6	4.5	NA	34-40 Limestone (SP/SM) light gray to gray, saturated, shell fragments, weakly cemented with 1-2.5" clasts of lithified limestone	
40		SB-7	4.5	NA	40-45' fossiliferous Silty Sand (SM) tan gray to gray saturated shell fragments - no limestone clasts	
45		SB-8	4.5	NA	45-50' fossiliferous Silty Sand (SM) tan gray to gray, saturated shell fragments - no limestone clasts	
50		SB-9	4.5	NA	50-60' Limestone (SP/SM) gray to light gray, saturated, shell fragments, weakly cemented with 1-2.5" clasts of lithified limestone	
55						

CH2MHILL

Boring Number: IR86-MW60IW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Sonic SR2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/4/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**0 - 1 Silty sand (SM)**-Tan, fine grain to med. grain, loose, moist	0 / -1	
	0 - 5	HA	5/5	NA		**1 - 8 Clay (CL)-** Grey/Orange, soft clay, moist-wet, trace med. grain sand, low plasticity.	1 / -8	
5	5 - 10	MC-1	5/5	NA				
						8 - 11 Clay (CL)- Grey, very soft to soft clay, little fine grain sand, moist-wet.	8 / -11	
10						**11 - 18 Sand (SP)** - Tan to Brown, fine grain sand, loose, moist.	11 / -18	
15								
						18 - 20 Sand (SW) - Tan, fine grain to med. grain sand, moist, loose, subrounded grains.	18 / -20	
20	10 - 20	MC-2	8/10	NA			20	

CH2MHILL

Boring Number: IR86-MW60IW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Sonic SR2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/4/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	10 - 20			NA		**20 - 27 Silty Sand (SM)** - Olive green, fine grain sand, some silt, loose, wet.		
25								25' - 27' contains small white shells and is med. dense
							-27	
						27 - 33 Gravelly Sand (SW)- Grey to Tan, fine grain to course grain sand, trace fine grain to course grain gravel (limestone, bivalve fossil), loose, wet.	27	
								29'-30' contains trace clay
30								
							-33	
						33 - 35 Sandy Clay (CL) - Tan, fine grain to course grain sand and clay, stiff, moist.	33	
							-35	
35						**35 - 37 Sandy clay-Silty Sand (CL-SM) -** Tan, fine grain to course grain sand and clay with silty sand, stiff, moist.	35	
							-37	
						37 - 40 Partially Cemented Sand (SW) - Gray, fine grain to course grain sand and limestone fragments, wet, loose to dense, clasts up to golfball size.	37	
							-40	
40	20 - 40	MC-3	20/20	NA			40	

CH2MHILL

Boring Number: IR86-MW60IW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Sonic SR2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/4/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20 - 40			NA		**40 - 46 Clayey Sand (SW) -** Tan, fine grain to gourse grain sand and limestone fragments, some clay, loose, moist, trace cemented clasts.		
45							-46 46	
						46 - 49 Silty Sand (SM) - Olive - Tan fine grain sand and silt, loose-med. dense, moist-wet, trace white shells, some pea size cemented clasts.	-49 49	
50						**49 - 55 Sand (SW)-** Light gray, fine to med. grain sand and shells, loose, wet.	-55 55	
55						End of Log		
60								

CH2MHILL

Boring Number: IR86-MW56DW

Client: NAVFAC
Project: CTO-081 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
0						Ground Surface	0 / 0	Hand Auger 0 - 5 ft. bgs, slight odor 0 - 2 ft. bgs.
5								
10								
15								
20								

CH2MHILL

Boring Number: IR86-MW56DW

Client: NAVFAC
Project: CTO-081 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/6/09

Depth (ft)	Sample Information				Soil Log	Soil Description	Depth / Elev (ft)	Comments
	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")				
25								
30								
35								
40								

CH2MHILL

Boring Number: IR86-MW56DW

Client: NAVFAC
Project: CTO-081 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
45								IR86-MW56IW installed at 45' bgs on 6/6/08
50								
55								
60								

CH2MHILL

Boring Number: IR86-MW56DW

Client: NAVFAC
Project: CTO-081 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
65								
70						**70 - 90 Silty Sand (SM) -** Olive grey, very fine grain sand, little - some silt, moist, loose - medium dense, trace coarse grain sand size white shell fragments. Grey from 85 - 85 ft. bgs.	-70 70	
75								
80								Slight odor

CH2MHILL

Boring Number: IR86-MW56DW

Client: NAVFAC
Project: CTO-081 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Sampling Method:
Logged by: E. Must
Start/Finish Date: 11/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
85								
90							-90	
						End of Log	90	
95								
100								

CH2MHILL

Boring Number: IR86-SB109, IR86-MW58DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore and Sonic Core
Logged by: E. Must/RDU, J. Frank/RDU
Start/Finish Date: 10/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	Hand auger 0-5' bgs.
0	0-5	HA	100	NA		**0-5 Silty Sand (SM)** - Tan, fine grain sand and silt, loose, moist.	0 / -5	
5	5-10	MC-1	100	NA		**5-7 Sandy Clay(CL)** - Brown, orange, tan, fine grain to course grain sand and clay, soft-med. stiff, moist.	5 / -7	
						7-8.5 Silty Sand (SM) - Dark brown/black, organic rich silt and fine grain sand, loose, moist.	7 / -9	
						8.5-9.5 Clay (CL) - Tan/Grwy, firm clay, trace fine grain sand increasing with depth.	9 / -10	
10						**9.5-11 Sandy Clay (CL)** - Grey fine grain sand and clay, very soft, saturated.	10 / -11	
	10-15	MC-2	90	NA		**11-15 Sand (SP)** - Light green - Grey, fine grain sand, loose, wet.	11 / -15	
15	15-20	MC-3	80	NA		**15-17.5 Clay (CH)** - Grey/Orange, firm clay, meium. - high plasticity, moist.	15 / -18	
						17.5-20 Clay (CL) - Grey/Brown, very soft, moist-wet, low- no plasticity.	18 / -20	
20							20	

CH2MHILL

Boring Number: IR86-SB109, IR86-MW58DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore and Sonic Core
Logged by: E. Must/RDU, J. Frank/RDU
Start/Finish Date: 10/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	20-25	MC-4	100	NA		**20-25 Sand (SP)** - Light green- grey, fine grain sand, loose, moist.	-25	
25	25-30	MC-5	90	NA		**25-27 Sand (SP)** - Tan, fine grain sand, loose, saturated.	25 -27	
						27-30 Sand (SP) - Light grey/green, fine grain sand, wet, loose, green clay clasts, soft, no plasticity, marble-plum size.	27 -30	
30	30-35	MC-6	100	NA		**30-36 Silty Sand (SM) -** Green-grey, fine grain sand, some silt, med. dense, trace coarse grain clast of fine grain sand, moist-wet.	30 -36	
35	35-40	MC-7	100	NA		**36-36.5 Sand (SP) -** Tand fine grain sand, saturated, very loose.	36	Hard at approx. 35' bgs.
						36.5-37.5 Silty Sand (SM) - Green-grey, fine grain sand, some silt, meium dense, trace coarse grained clast of fine grain sand. moist-wet.	-38 38	
						37.5-38 Cemented Sand (SW) - Light tan, fine grain - course grain sand and shells. Cemented into gravel size pieces. loose-dense, moist.	-39 39 -40	
40							40	

CH2MHILL

Boring Number: IR86-SB109, IR86-MW58DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore and Sonic Core
Logged by: E. Must/RDU, J. Frank/RDU
Start/Finish Date: 10/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	40-45	MC-8	100	NA		**38-39 Silty Sand (SM) -** Tan, very soft, fine grain sand and shells, wet. **39-40 Cemented Sand (SW) -** Light tan, fine-coarse grain sand and shells, cemented into gravel size pieces, loose-dense, moist. **40-43 Cemented Sand (SW)** - Light tan, fine-coarse grain sand and shells, cemeneted into gravel size pieces, loose-dense, moist, some rock fragments (fossils, limestone, cemented clasts)	-43 43 -44 44	
45	45-50	MC-9	100	NA		**43-44 Cemented Sand (SW)** - Grey, fine-coarse grain sand and shells cemented into gravel size pieces, loose-dense, moist, some rock fragments (fossil and limestone), cemented clasts. **44-45 Cemented Sand (SW) -** Light tan, fine-coarse grain sand and shells, cemeneted into gravel size pieces, loose-dense, moist, some rock fragments (fossils, limestone, cemented clasts). **45-50 Silty Sand (SM) -** Tan, fine-medium grain sand and shells, some silt, trace pea size clasts of cemented sand and shells with loose/saturated.	-45 45 -50 50	
50	50-55	MC-10	100	NA		**50-54.5 Silty Sand (SM) -** olive green- grey, fine-medium grain sand and shells, some silt, trace pea size clasts of cemeneted sand and shells, medium dense, saturated.	-55 55	
55	55-60	MC-11	100	NA		**54.5-50 Limestone** - Grey, coarse grain sand to gravel size pieces of fossil ferous limestone, wet, loose-medium dense, some coarse grain sand size shell fragments. **55-60 Sand (SW) -** Grey, fine - coarse grain sand shell and rock fragments, loose, wet.	-60 60	
60								

CH2MHILL

Boring Number: IR86-SB109, IR86-MW58DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore and Sonic Core
Logged by: E. Must/RDU, J. Frank/RDU
Start/Finish Date: 10/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						60-61 Sand (SW) - Light grey, fine - medium grain sand and shells, loose, wet	-61	
						61-65 Cemented Sand (SW) - Light grey, fine - coarse grain sand, shells and limestone, loose - medium dense, cemented clasts up to coarse gravel size.	61	
	60-65	MC-12	100	NA				
65								
	65-70	MC-13	100	NA			-68	
						68-69 Cemented Sand (SW) in Sitly Sand (SM) - Transition between cemented sand from 61-68' bgs and olive sility sand, very fine grain sand, some sily, medium dense, white shell fragments, wet	68 -69 69	
70						**69-90 Sitly Sand (SM)** - Olive/grey, very fine grain sand, some silt, medium density- loose, moist, white shell fragments, more sandy towards 90' bgs.		
	70-75	MC-14	100	NA				
75								
	75-80	MC-15	100	NA				
80								End of IR86-SB109.

Boring Number: IR86-SB109, IR86-MW58DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore and Sonic Core
Logged by: E. Must/RDU, J. Frank/RDU
Start/Finish Date: 10/6/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
85	80-90	SC-1	100	NA				
90							-90	
						End of Log	90	
95								
100								

CH2MHILL

Boring Number: IR86-MW59DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Logged by: J. Frank
Start/Finish Date: 11/8/09

Depth (ft)	Sample Information: Interval	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0	0 - 5	HA	NA	NA		**0-3 Silty Sand (SM) -** olive grey, wet, medium dense, fine grained.	0 / -3	
						3-5 Clayey Sand (SC) - tan, moist, medium dense, fine grained.	3 / -5	
5	5 - 10	DP-1	54"	NA		**5-5.5** No Recovery	5	
						5.5- 8 Clay (CL) - Grey with orange streaks, moist, stiff.	-8	
						8- 10 Clayey Sand (SC)- tan, moist, medium dense, fine grained.	8 / -10	
10	10 - 15	DP-2	5/5	NA		**10-15 Sand (SP) -** light grey, wet, loose, fine grained.	10 / -15	
15	15 - 20	DP-3	54"	NA		**15-15.5** No Recovery	15	
						15.5- 18 Sand (SP) - light grey, wet, loose, fine grained.	-18	
						18 - 20 Silty Sand (SM) - dark brown/olive grey, dense, fine grained, some white shell fragments.	18 / -20	
20							20	

CH2MHILL

Boring Number: IR86-MW59DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Logged by: J. Frank
Start/Finish Date: 11/8/09

Depth (ft)	Sample Information: Interval	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						20-20.5 No Recovery	-21	
	20 - 25	DP-4	54"	NA		**20.5 - 23 Silty Sand (SM) -** dark brown/olive green, dense, fine grained, some white shell fragments.	21 -23	
						23-24.5 Cemented Sand (SW) - light grey, wet , dense, fine to coarse grained limestone clasts up to 1/2" shell fragments.	23 -25	
25						**24.5 - 25 Silty Sand (SM) -** olive grey, wet, medium dense, fine grained.	25	
	25 - 30	DP-5	48"	NA		**26 - 30 Cemented Sand (SW) -** light grey, wet, dense, fine to coarse grained limestone clasts up to 1/2" shell fragments.	-26 26	
						26 - 30 Cemented Sand (SW) - light grey, wet, dense, fine to course grained limestone clasts up to 1/2" shell fragments.	-30	
30						**30-31** No Recovery	30 -31	
	30 - 35	DP-6	48"	NA		**31- 33 Cemented Sand (SW) -** light grey, wet, dense, fine to course grained limestone clasts up to 1/2" shell fragments.	31 -33	
35						**33-38 Clayey Sand (SC)** - light tan, wet, loose, fine grained, some shell fragments.	33	
	35 - 40	DP-7	5/5	NA			-38	
						38-40 Silty Sand (SM) - olive grey, wet, dense, fine grained, white shell fragments	38 -40	
40							40	

CH2MHILL

Boring Number: IR86-MW59DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Logged by: J. Frank
Start/Finish Date: 11/8/09

Depth (ft)	Sample Information: Interval	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	40 - 45	DP-8	42"	NA		**40-41.5** No Recovery	-42	
						41.5- 43 Silty Sand (SM) - olive grey, wet, dense, fine grained, white shell fragments	42 -43	
						43-45 Clayey Sand (SC) - Dark brown, wet, loose, fine grained.	43 -45	
45	45 - 50	DP-9	24"	NA		**45-48** No Recovery.	45 -48	
						48-50 Clayey Sand (SC) - Dark brown, wet, loose, fine grained.	48 -50	
50	50 - 55	DP-10	24"	NA		**50-53** No Recovery	50 -53	
						53-55 Clayey Sand (SC) - Dark brown, wet, loose, fine grained.	53 -55	
55	55 - 60	DP-11	24"	NA		**55-58** No Recovery	55 -58	
						58-60 Cemented Sand (SW) - Light gray, wet, dense, fine to coarse grained up to 1/2" limestone clasts, shell fragments.	58 -60	Driller felt lithology change into more of a silty material.
60							60	

CH2MHILL

Boring Number: IR86-MW59DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Logged by: J. Frank
Start/Finish Date: 11/8/09

Depth (ft)	Sample Information: Interval	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						60-61 No Recovery	-61	
						61-61.5 Sand (SP) - Dark grey, wet, loose, medium dense, medium grained.	61	
	60 - 65	DP-12	48"	NA		**61.5-64 Cemented Sand (SW) -** Light gray, wet, dense, fine to coarse grained up to 1/2" limestone clasts, shell fragments.	-64	
						64-65 Silty Sand (SM) - olive grey, wet, dense, fine grained, shell fragments.	64 -65	
65						**65 - 66** No Recovery	65	
	65 - 70	DP-13	NA	NA			-70	
70						**70-80 Silty Sand (SM)-** Light green-grey, wet, loose, some small shell fragments, silt lense green-grey of 74-76.	70	
75								
80							-80 80	

CH2MHILL

Boring Number: IR86-MW59DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic SR-2
Logged by: J. Frank
Start/Finish Date: 11/8/09

Depth (ft)	Sample Information: Interval	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						80-85 Sand with little silt (SP) - light grey trace green, wet, loose, some shell fragments.		
85						**85-90 Silty Sand (SM) -** Green- grey, moist to wet, soft/loose.	-85 85	
90						End of Log	-90 90	
95								
100								

CH2MHILL

Boring Number: IR86-MW62

Client: NAVFAC
Project: CTO81-Site 86
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic/SR-2, 5" x 3.5" x 5"
Sampling Method: Core Barrel
Logged by: C. Leblanc
Start/Finish Date: 12/1/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Topsoil**	0	
	0 - 5		60"	HA-1		**Clay (CL)** Tan to grey, moist, soft, low plasticity.		
5							-7	
	5 - 10		60"	RS-1		**Clay (CH)** Grey, saturated, very soft, high plasticity, minor very fine sand	7	
10								
	10 - 15		60"	RS-2			-14	
						Sand (SP) Grey to light tan, loose, medium to fine grained, poorly sorted	14	
15								
	15 - 20		60"	RS-3				
20								

CH2MHILL

Boring Number: IR86-MW62

Client: NAVFAC
Project: CTO81-Site 86
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection
Drilling Method: Rotosonic/SR-2, 5" x 3.5" x 5"
Sampling Method: Core Barrel
Logged by: C. Leblanc
Start/Finish Date: 12/1/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
							-21	
						Sandy Clay (CL) Grey, stiff, moist.	21	
	20 - 25		60"	RS-4				
25								
	25 - 30		60"	RS-5				
30								
							-32	
	30 - 35		60"	RS-6		**Sand (SW)** Light tan partially cemented sand, saturated, hard/dense, high clay content.	32	
							-35	
35						End of Log	35	
40								

Boring Number: IR86-SB117 (IR86-MW63 Cluster)

Client: NAVFAC
Project: CTO - 81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore
Logged by: D. Lubell
Start/Finish Date: 11/15/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						Ground Surface	0	
0						**Sitly Sand (SM)** Black, organic, loose, fine grain.	0	
	0-5	HA-1	4/5	NA		**Clayey Sand (CL)** Olive brown, moist, fine grained .	-4	
						No Recovery	4	
5							-6	
	5-10	GP-1	4.5/5	NA		**Clayey Sand (CL)** Brown, fine grained, wet.	6 -9	
						Clay (CL) Grey, low plasticity, wet, very soft.	9	
10								
	10-15	GP-2	5/5	NA			-15	
						Sand (SP) Olive brown, fine grained sand, medium dense.	15	
15						**Sand (SP)** Brown, fine grained, medium dense.	-17	
	15-20	GP-3	4.75/5	NA		**Sand (SW)** Tan, fine to coarse grained, loose.	17	
20							-20 20	

CH2MHILL

Boring Number: IR86-SB117 (IR86-MW63 Cluster)

Client: NAVFAC
Project: CTO - 81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore
Logged by: D. Lubell
Start/Finish Date: 11/15/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
						No Recovery	-21	
						Sand (SP) Tan, fine grained sand, medium dense.	21	
						Sand (SW) Tan, fine to coarse grained, medium dense.	-23	
	20-25	GP-4	4.5/5	NA		**Silty Sand (SM)** Dark grey, dense, medium - fine grained sand.	23 -25	
25	25-30	GP-5	5/5	NA		**Sillty Sand (SM)** Dark grey, fine grained, medium dense.	25 -29	
						Silty Sand (SM) Dark grey, fine grained, soft.	29 -31	Limestone
						Sand (SP) Medium coarse grained sand up to 1" heavily cemented matrix, shell figures.	31 -32	
	30-35	GP-6	5/5	NA		**Silty Sand (SM)** Weakly cemented, small clasts up to 10 mm.	32 -35	
35						**No Recovery**	35	Limestone
	35-40	GP-7	4.5/5	NA		**Cemented Sand (SW)** Cemented Sands up to 10mm, lots of shell fragments, heavily cemented matrix, small gastropods.	-40	
40							40	

CH2MHILL

Boring Number: IR86-SB117 (IR86-MW63 Cluster)

Client: NAVFAC
Project: CTO - 81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore
Logged by: D. Lubell
Start/Finish Date: 11/15/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	40-45	GP-8	0/5	NA		**Silty Sand (SM)** Tan, weakly cemented small clasts up to 10 mm.		
45	45-50	GP-9	0/5	NA			-50	
50	50-55	GP-10	4/5	NA		**Silty Sand (SM)** Very weakly cemented, clast sizes from 2 mm to 2.5 mm, large clasts.	50 -54	
55						**Silty Sand (SM)** Tan, very weakly cemented, clasts up to 5 mm.	54 -57	
	55-60	GP-11	4/5	NA		**Sand (SP)** Tan, medium coarse, shell fragments, trace clay.	57 -59	
60						**Sand (SP)** Tan, cemented sand clasts 1/8" to 2.5", shell fragments	59	

Boring Number: IR86-SB117 (IR86-MW63 Cluster)

Client: NAVFAC
Project: CTO - 81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: ARS Technologies
Drilling Method: 8040 DT Geoprobe
Sampling Method: MacroCore
Logged by: D. Lubell
Start/Finish Date: 11/15/09

Depth (ft)	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Description	Depth / Elev (ft)	Comments
							Limestone
	60-65	GP-12	5/5	NA		-63	
					Fossiliferous Limestone Grey, shell fragments up to 1".	63	
65							
	65-70	GP-13	5/5	NA		-68	
					Silty Sand (SM) Grey, soft, trace clay.	68	
					Silty Sand (SM) Grey, cemented clasts up to 2" shell fragments.		
70							
	70-75	GP-14	5/5	NA		-73	
					Sand (SP) Grey, medium to fine sand.	73	
75						-75	
					Sand (SP) Grey, medium to coarse grain.	75	
	75-80	GP-15	5/5	NA		-78	
					End of Log	78	
80							

CH2MHILL

Boring Number: IR86-MW61DW

Driller: Groundwater Protection, Inc
Client: NAVFAC
Drilling Method:
Project: CTO-81 Site 86 Expanded SRI
Sampling Method: Rotosonic
Location: MCAS New River
Logged by: C. LeBlanc
Project Number: 389017
Start/Finish Date: 12/2/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
0						Ground Surface	0	
						0 - 70 Ft. Boring Data Unavailable	0	
5								
10								
15								
20								

CH2MHILL

Boring Number: IR86-MW61DW

Driller: Groundwater Protection, Inc
Client: NAVFAC
Drilling Method:
Project: CTO-81 Site 86 Expanded SRI
Sampling Method: Rotosonic
Location: MCAS New River
Logged by: C. LeBlanc
Project Number: 389017
Start/Finish Date: 12/2/09

Depth (ft)	Sample Information				Soil Log	Soil Description	Depth / Elev (ft)	Comments
	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")				
25								
30								
35								
40								

CH2MHILL

Boring Number: IR86-MW61DW

Driller: Groundwater Protection, Inc
Client: NAVFAC
Drilling Method:
Project: CTO-81 Site 86 Expanded SRI
Sampling Method: Rotosonic
Location: MCAS New River
Logged by: C. LeBlanc
Project Number: 389017
Start/Finish Date: 12/2/09

Depth (ft)	Sample Information				Soil Log	Soil Description	Depth / Elev (ft)	Comments
	Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")				
45								
50								
55								
60								

CH2MHILL

Boring Number: IR86-MW61DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection, Inc
Drilling Method:
Sampling Method: Rotosonic
Logged by: C. LeBlanc
Start/Finish Date: 12/2/09

Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
65								
70							-70	
	70 - 75	RS-1	5/5			**70 - 90 Silty Sand (SM) -** Grey/Olive grey, fine grain, moist, medium dense, slightly cohesive.	70	
75								
	75 - 80	RS-2	5/5					
80								

CH2MHILL

Boring Number: IR86-MW61DW

Client: NAVFAC
Project: CTO-81 Site 86 Expanded SRI
Location: MCAS New River
Project Number: 389017

Driller: Groundwater Protection, Inc
Drilling Method:
Sampling Method: Rotosonic
Logged by: C. LeBlanc
Start/Finish Date: 12/2/09

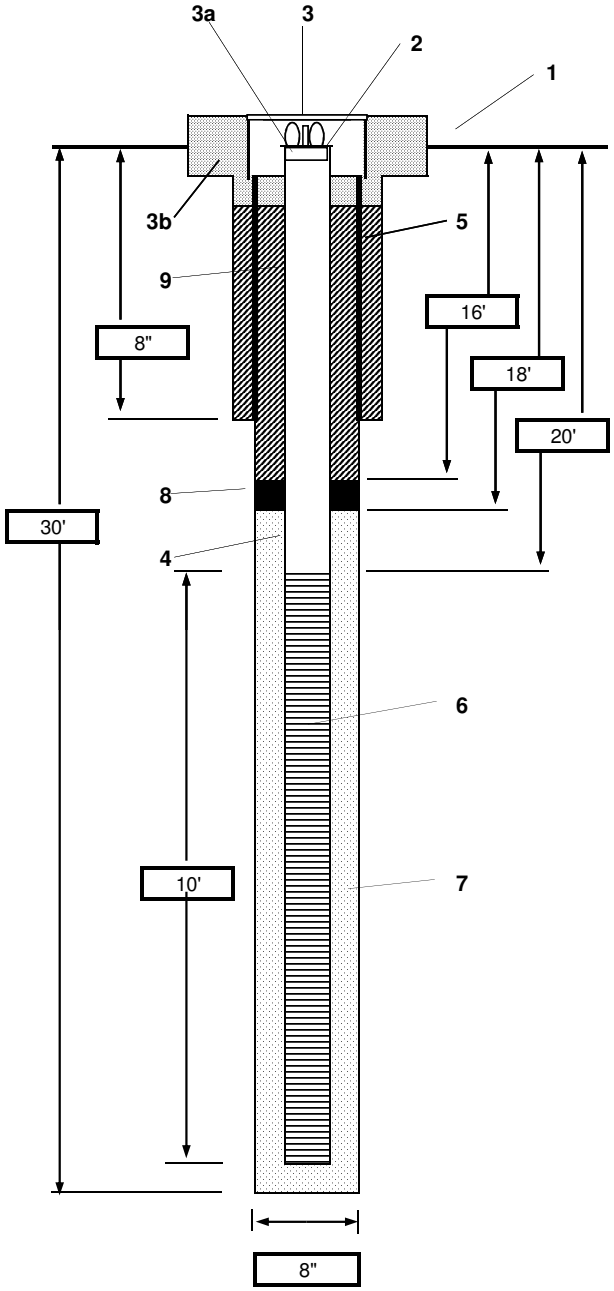
Depth (ft)	Sample Information: Sample #	Sample Type	Recovery (%)	SPT (6"-6"-6")	Soil Log	Soil Description	Depth / Elev (ft)	Comments
	80 - 85	RS-3	5/5					
85								
	85 - 90	RS-4	5/5					
90							-90	
						End of Log	90	
95								
100								

Well Completion Diagrams

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW48	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 10/30/2007 END : 10/30/2007 LOGGER : B. Sprouse/CLT



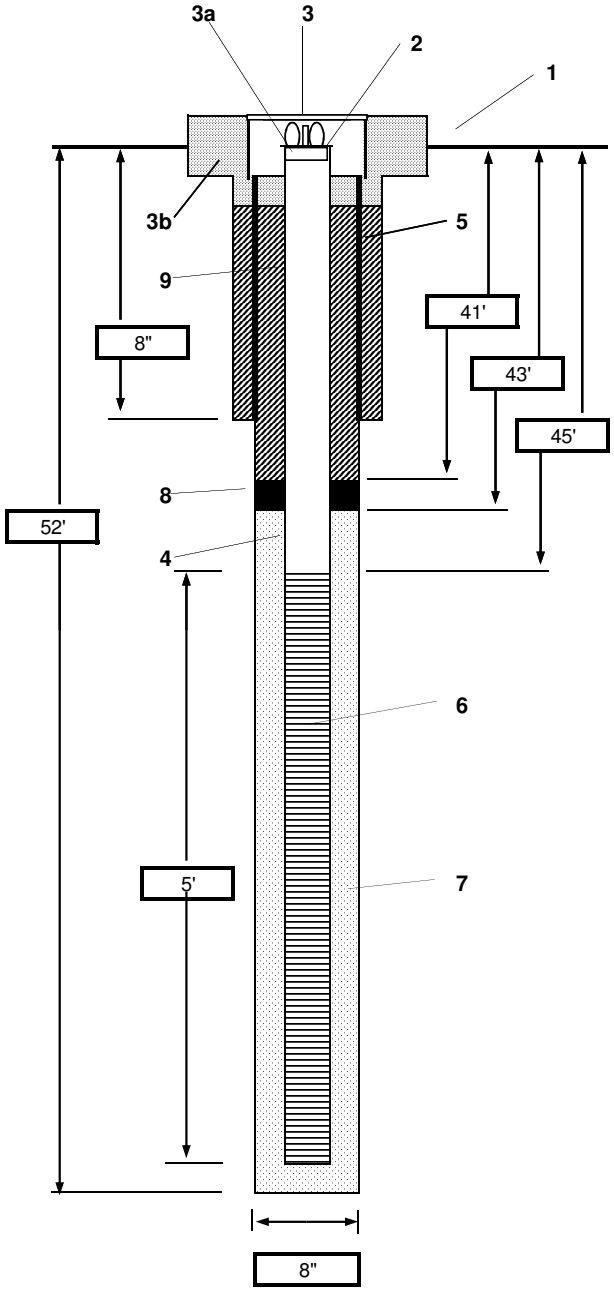
1- Ground elevation at well	18.18 ft msl
2- Top of casing elevation	17.62 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	NA
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	1 hour
Estimated purge volume	30 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW48IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 10/30/2007 END : 10/30/2007 LOGGER : B. Sprouse/CLT



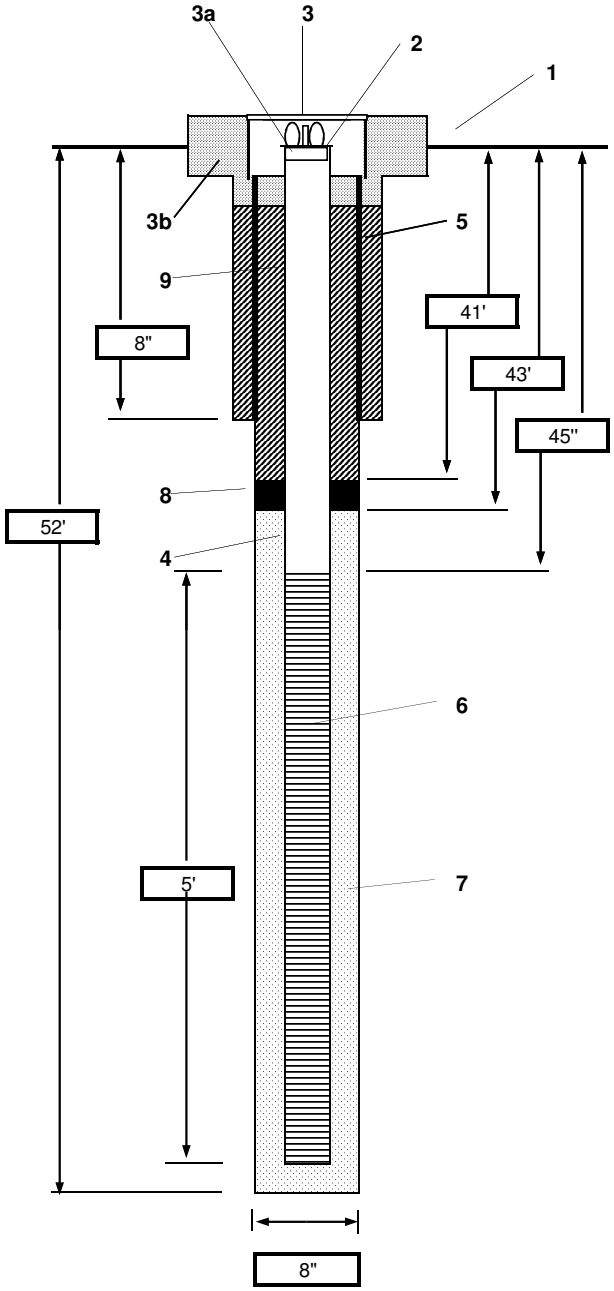
1- Ground elevation at well	NA
2- Top of casing elevation	18.44 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	2.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	1 hour
Estimated purge volume	17 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW43IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 10/31/2007 END : 10/31/2007 LOGGER : B. Sprouse/CLT



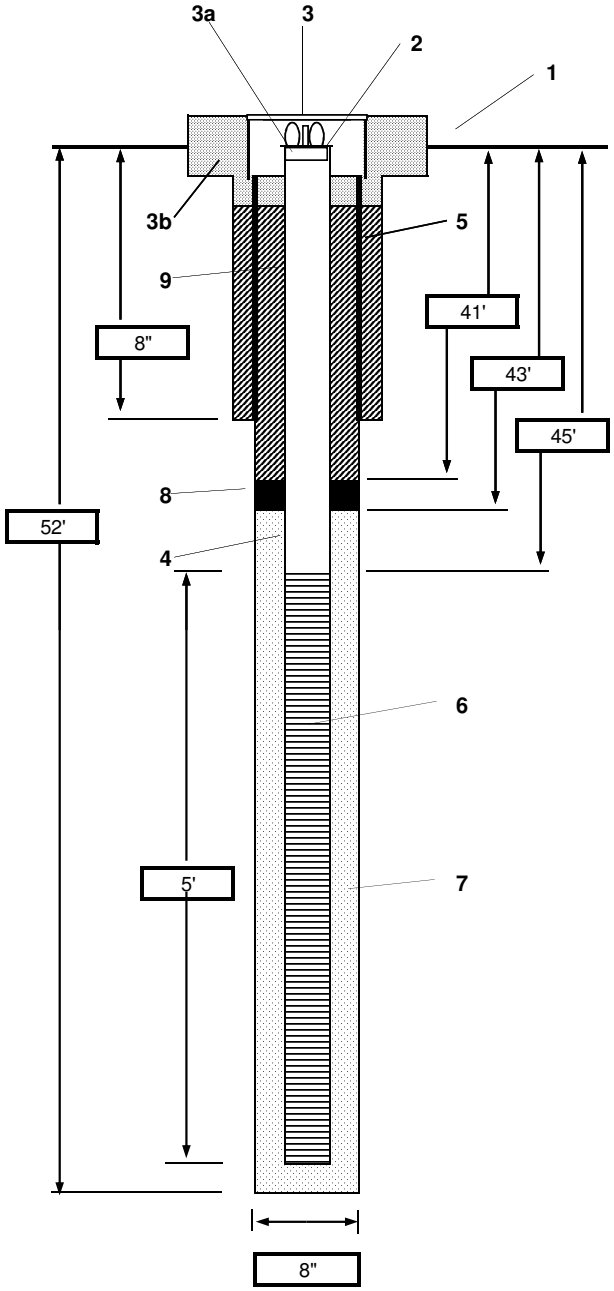
1- Ground elevation at well	18.18 ft msl
2- Top of casing elevation	17.78 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	2.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	37 min
Estimated purge volume	20 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW50IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/1/2007 END : 11/01/2007 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	17.44 ft msl
2- Top of casing elevation	17.07 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	2.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	62 min
Estimated purge volume	15 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW44IW	SHEET 1 of 1

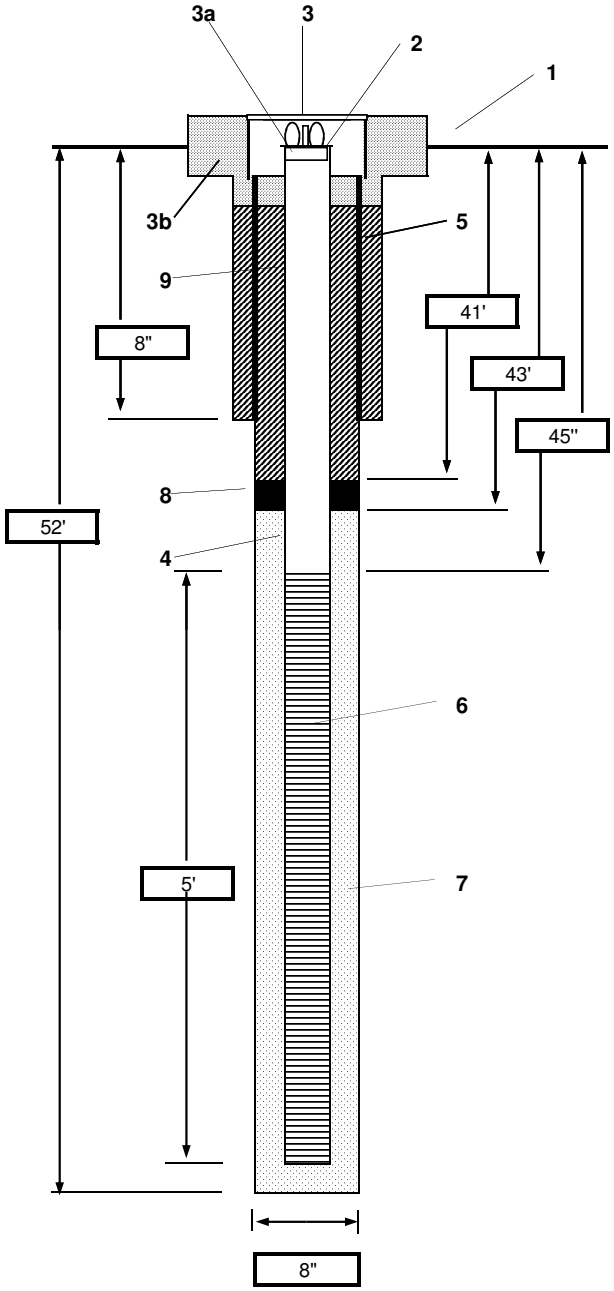
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : Parratt Wolff

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler

WATER LEVELS : START : 11/2/2007 END : 11/02/2007 LOGGER : B. Sprouse/CLT



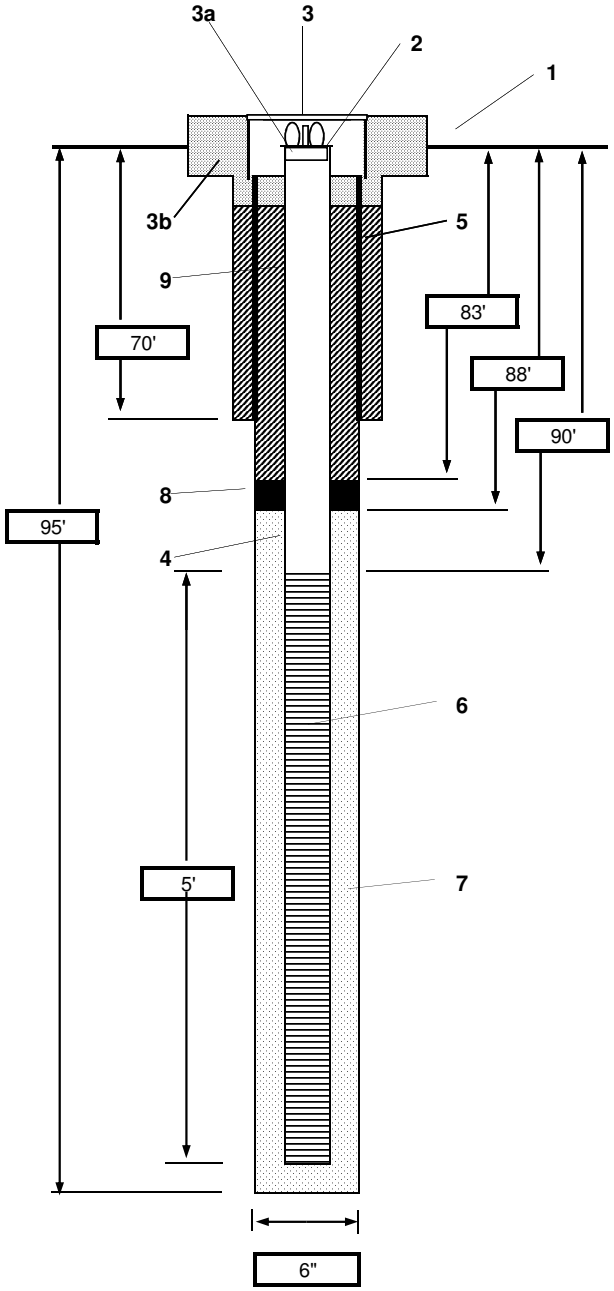
1- Ground elevation at well	18.41 ft msl
2- Top of casing elevation	18.21 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	NA
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	1 hour
Estimated purge volume	30 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW49DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary
WATER LEVELS : START : 10/31/2007 END : 11/05/2007 LOGGER : E. Must/RDU



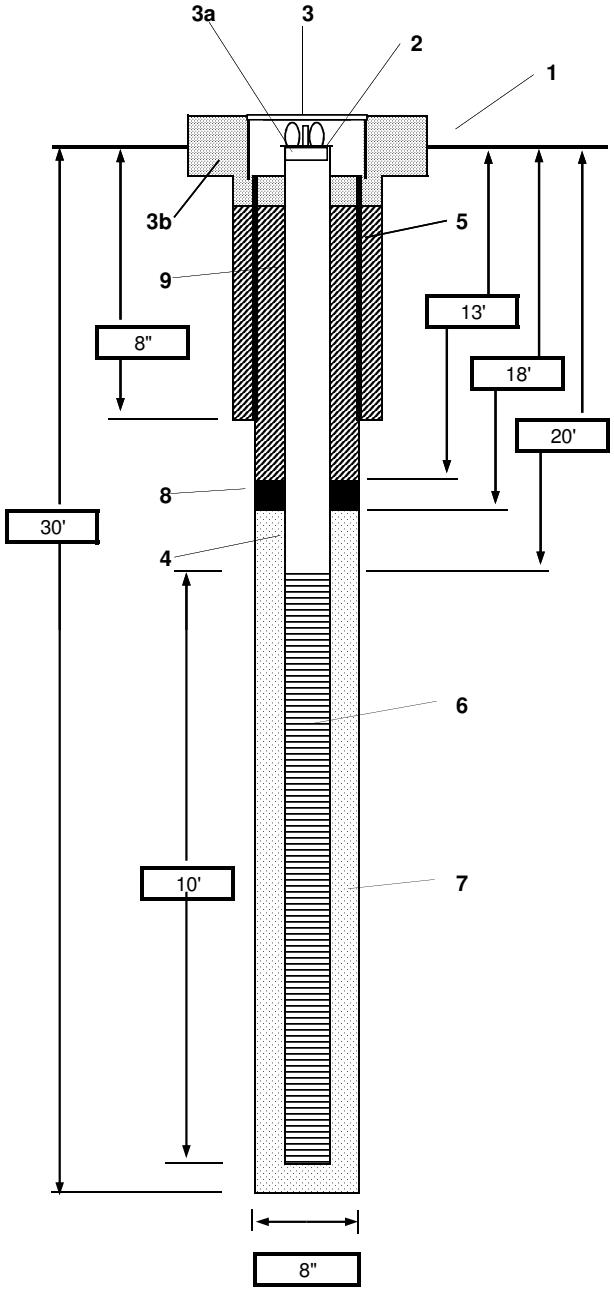
1- Ground elevation at well	17.56 ft msl
2- Top of casing elevation	17.17 f t msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	6" Schedule 80 PVC
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	1.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	35-40 gal water: 5 bags portland: 6 lbs bent
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	~50 gal
Development method	purge and surge
Development time	1 hour
Estimated purge volume	60 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW47	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/6/2007 0:00 END : 11/06/2007 LOGGER : B. Sprouse/CLT



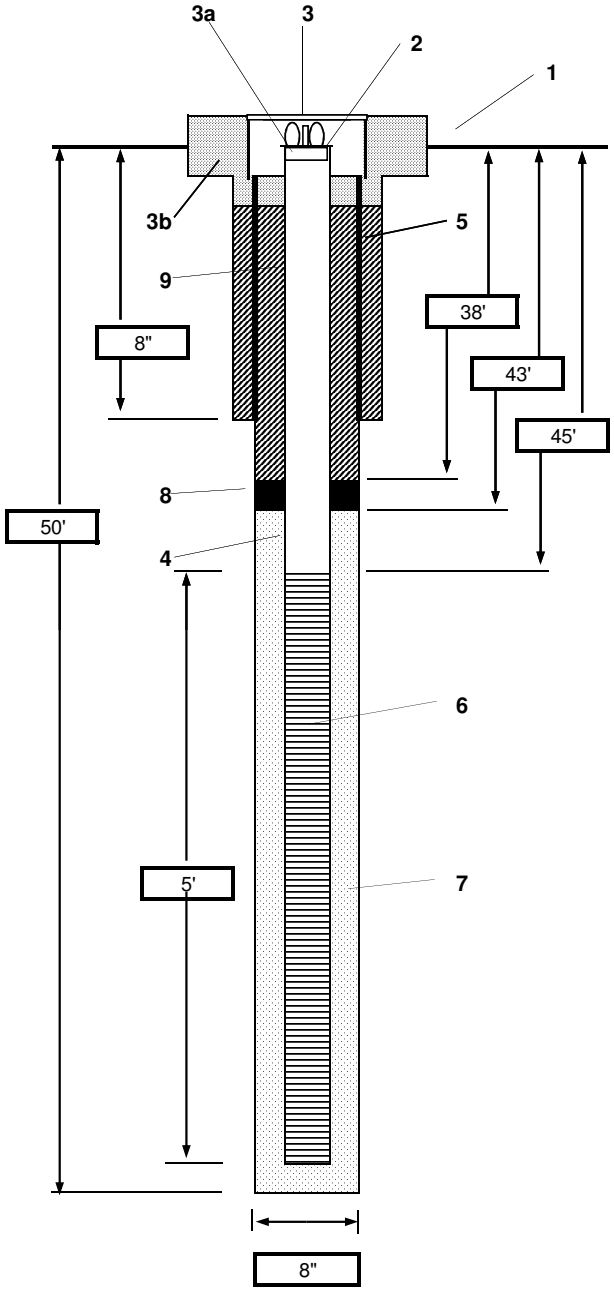
1- Ground elevation at well	18.06 ft msl
2- Top of casing elevation	18.1 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2' square
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	NA
8- Type of seal	3/8" bentonite chips
a) Quantity used	NA
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	23 min
Estimated purge volume	12 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW47IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/06/07 END : 11/06/07 LOGGER : B. Sprouse/CLT



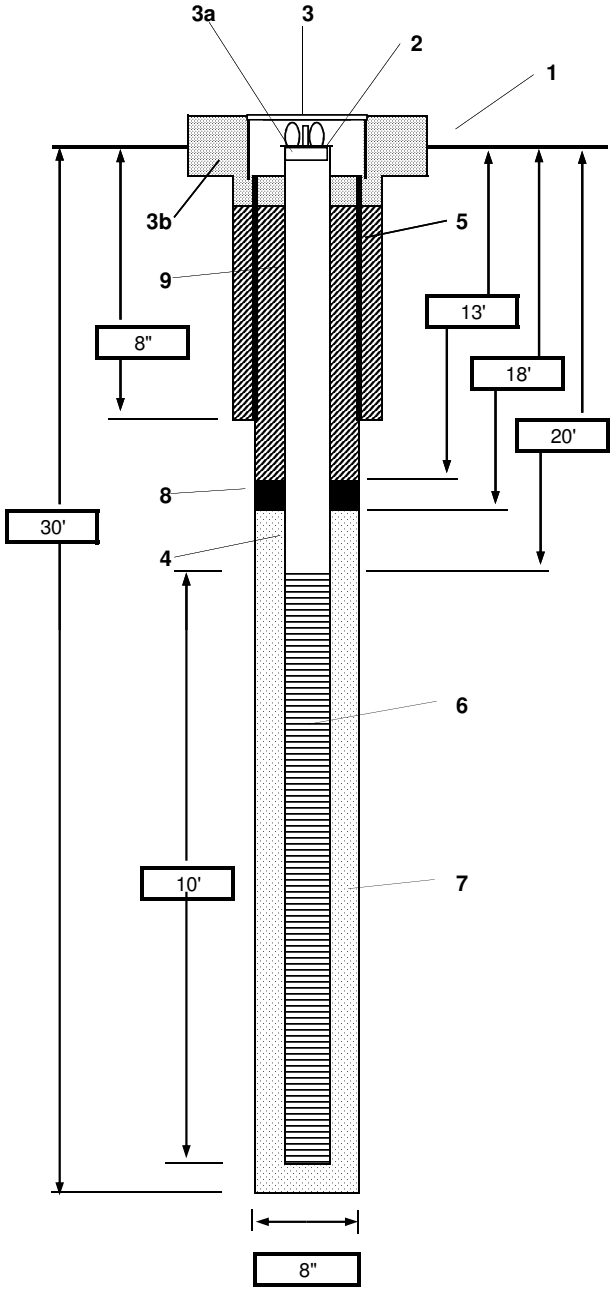
1- Ground elevation at well	18.36 ft msl
2- Top of casing elevation	18.14 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	2.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	0.5- 50 lbs bag
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	23 min
Estimated purge volume	12 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW40	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/7/2007 END : 11/7/2007 LOGGER : B. Sprouse/CLT



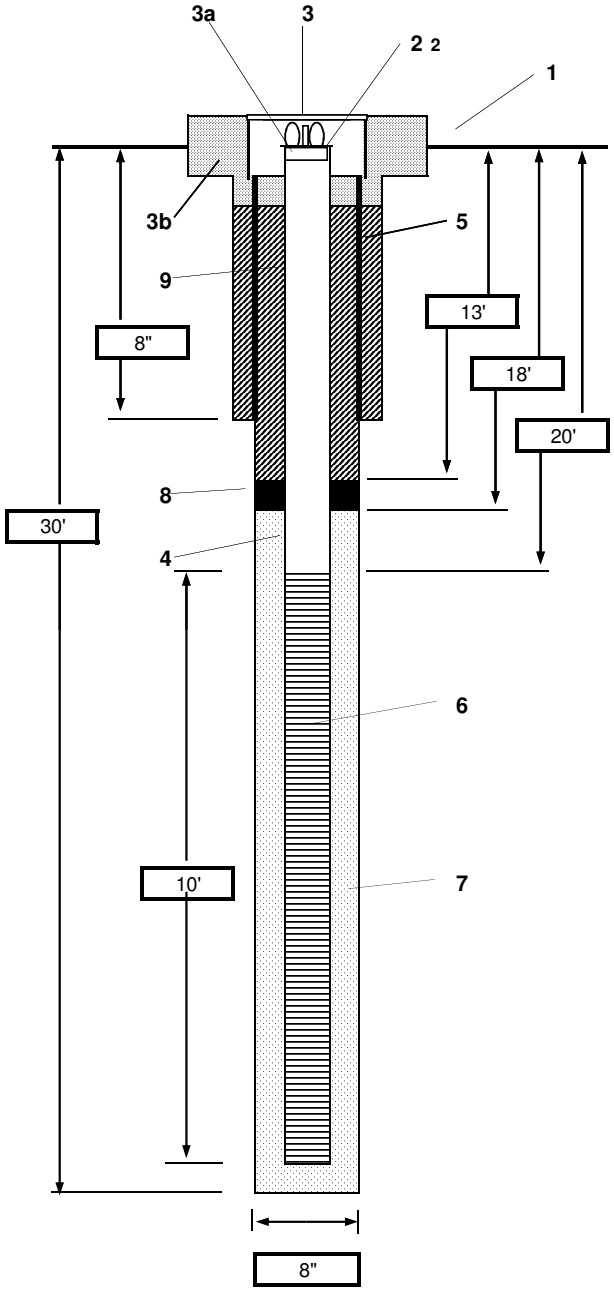
1- Ground elevation at well	20.48 ft msl
2- Top of casing elevation	20.28 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2' square
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	5.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	2- 50 lbs bags
9- Grout	
a) Grout mix used	15 gal water: 2 bags portland: 4 lbs bent.
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	~20 gal
Development method	purge and surge
Development time	47 min
Estimated purge volume	24 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW39	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/8/2007 END : 11/8/2007 LOGGER : E. Must/RDU



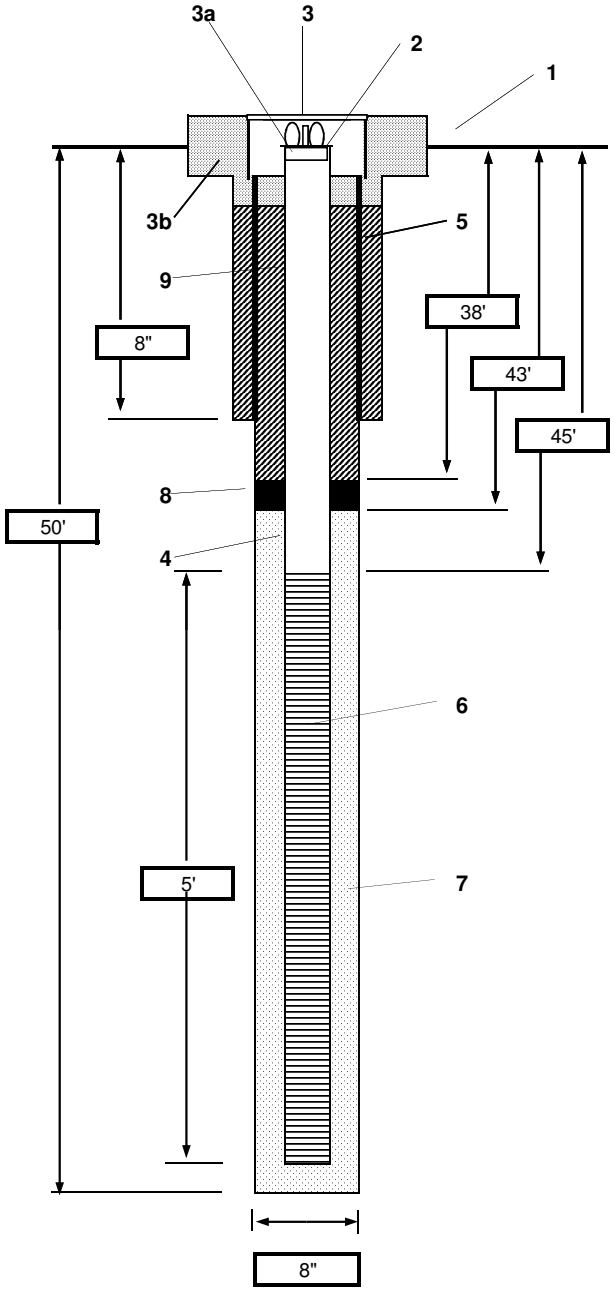
1- Ground elevation at well	18.99 ft msl
2- Top of casing elevation	18.72 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	1.5' X 1.5' (See Field Notes)
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	5.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	15 gal water: 2 bags portland
b) Method of placement	tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	33 min
Estimated purge volume	15 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW42IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/8/2007 END : 11/8/2007 LOGGER : E. Must/RDU



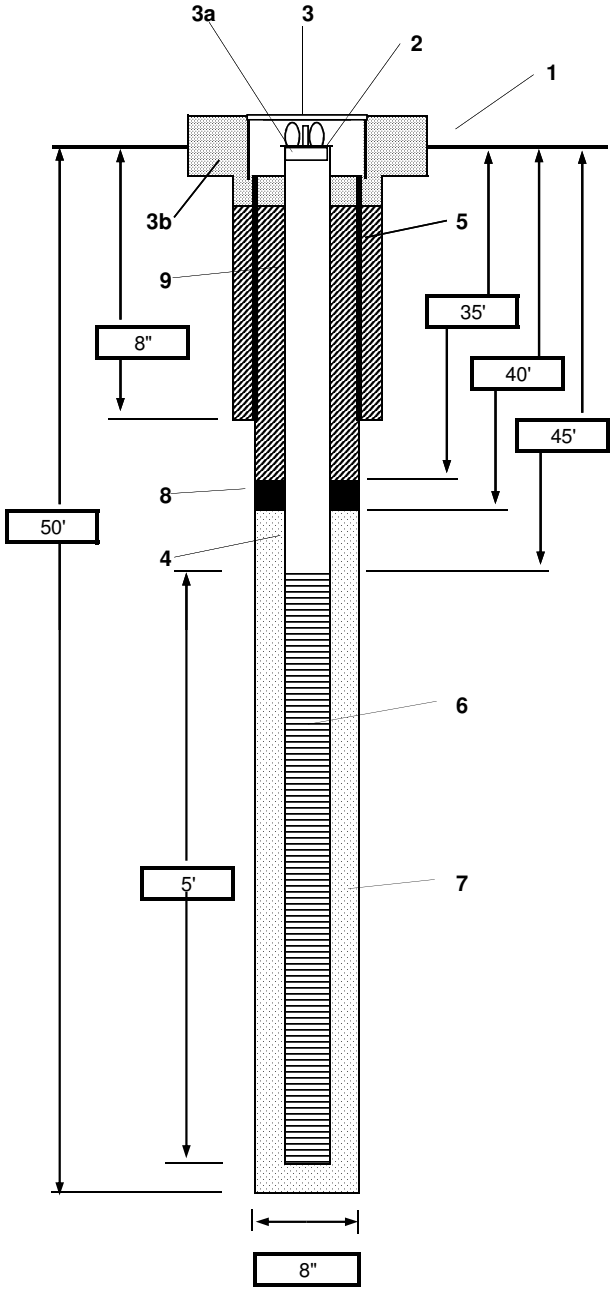
1- Ground elevation at well	17.91 ft msl
2- Top of casing elevation	17.44 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' diameter
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	3- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1 bag
9- Grout	
a) Grout mix used	20-25 gal water: 3 bags portland
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	~ 40 gal
Development method	purge and surge
Development time	47 min
Estimated purge volume	23 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW46IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler
WATER LEVELS : START : 11/9/2007 END : 11/09/2007 LOGGER : E. Must/RDU



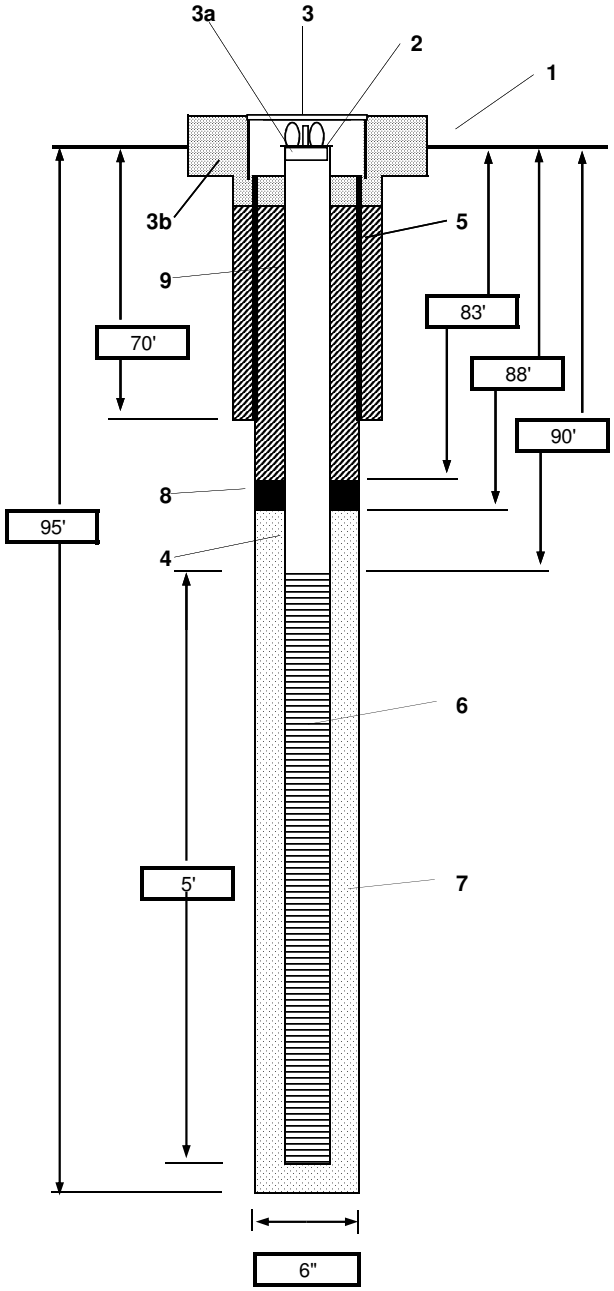
1- Ground elevation at well	17.93 ft msl
2- Top of casing elevation	17.69 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	2- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	0.75- 50 lbs bag
9- Grout	
a) Grout mix used	7:1 water to portland mix
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	30 gal
Development method	purge and surge
Development time	18 min
Estimated purge volume	9 gal

Comments Sand bridges, flushed hole, after flushing sand was at 40' bgs
Unable to flush everything out because there was no way to contain all materi
enough to not make a mess on the flightline.

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW42DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary
WATER LEVELS : START : 11/4/2007 END : 11/13/2007 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	17.81 ft msl
2- Top of casing elevation	17.39 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	6" Schedule 80 PVC
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	1.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	purge and surge
Development time	1 hour
Estimated purge volume	60 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW51DW	SHEET 1 of 1

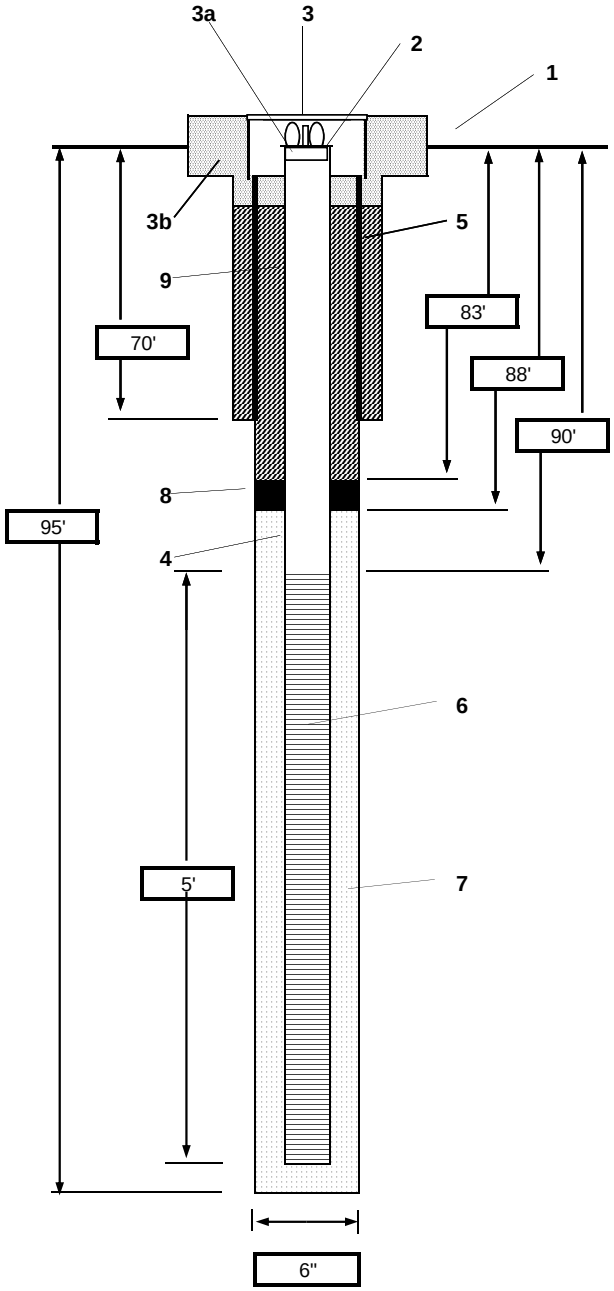
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : Parratt Wolff

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary

WATER LEVELS : START : 10/30/2007 END : 11/16/2007 LOGGER : B. Sprouse/CLT



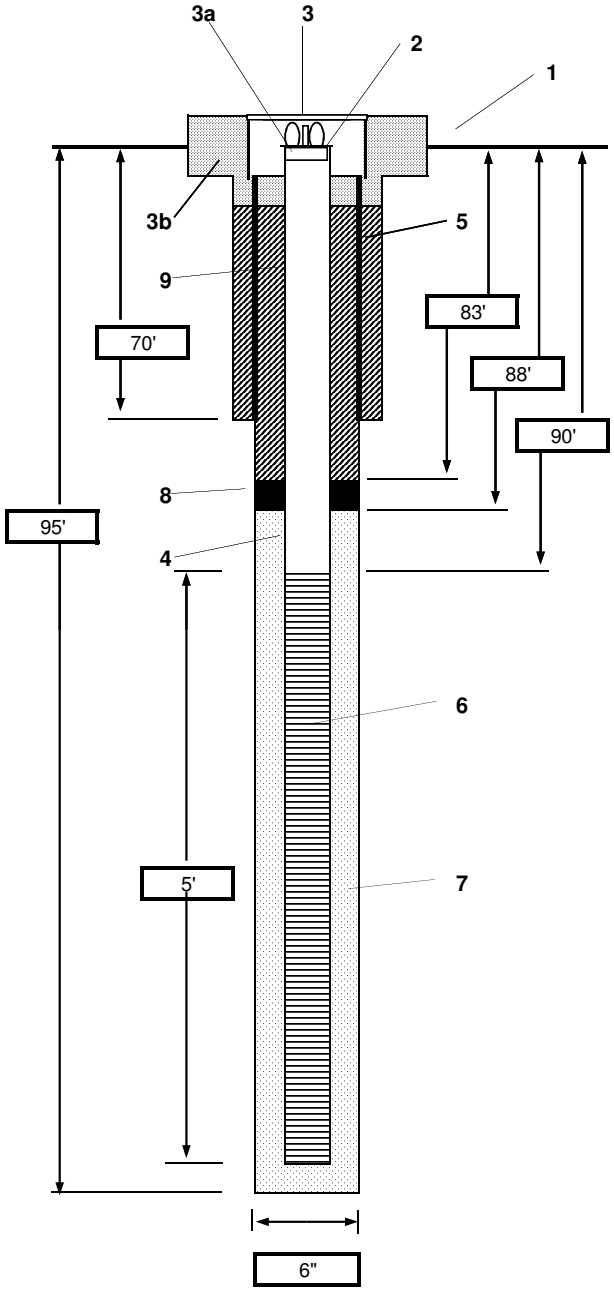
1- Ground elevation at well	16.05 ft msl
2- Top of casing elevation	15.87 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	6" Schedule 80 PVC
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	1.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	40 gal
Development method	purge and surge
Development time	1 hour
Estimated purge volume	60 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW44DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary
WATER LEVELS : START : 11/2/2007 END : 11/17/2007 LOGGER : B. Sprouse/CLT



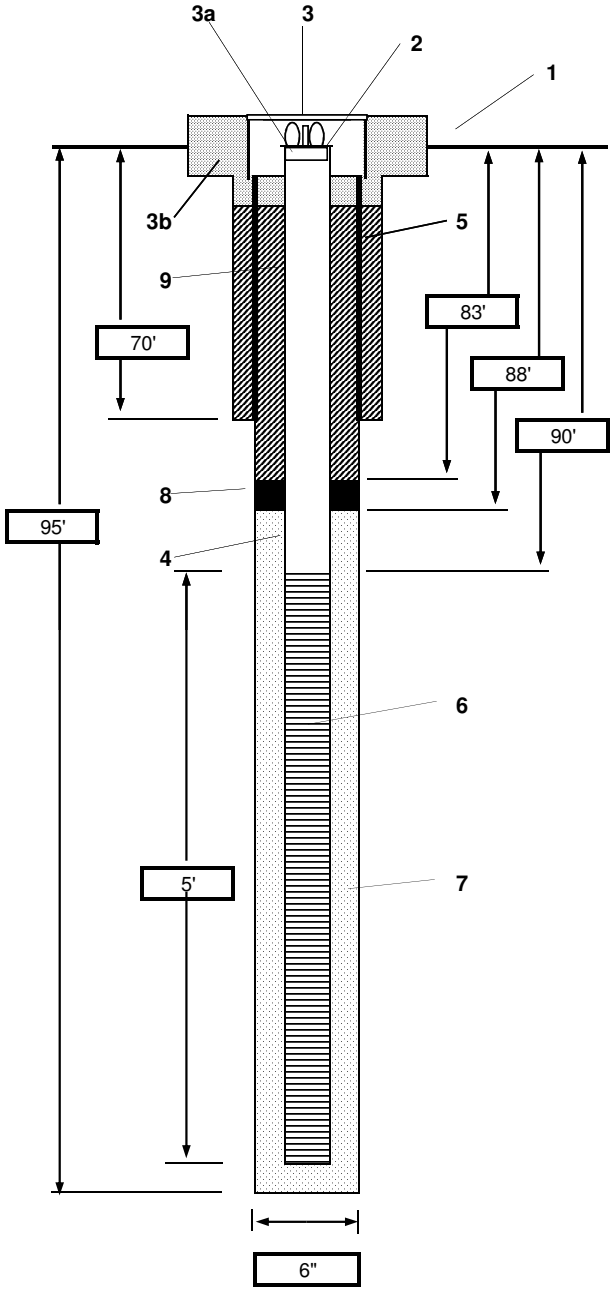
1- Ground elevation at well	18.49 ft msl
2- Top of casing elevation	18.09 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	6" Schedule 80 PVC
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	1.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	90 gal
Development method	purge and surge
Development time	1 hour
Estimated purge volume	60 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW45DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : Parratt Wolff
DRILLING METHOD AND EQUIPMENT USED : CME I75/4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary
WATER LEVELS : START : 11/14/2007 END : 11/18/2007 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	18.58 ft msl
2- Top of casing elevation	18.22 ft msl
3- Wellhead protection cover type	8" bolted manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' X 2'
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	6" Schedule 80 PVC
6- Type/slot size of screen	2"/0.010" machine slotted PVC
7- Type screen filter	No. 1 Filter sand
a) Quantity used	1.5- 50 lbs bags
8- Type of seal	3/8" bentonite chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	90 gal
Development method	purge and surge
Development time	52 min
Estimated purge volume	52 gal

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW54IW	SHEET 1 of 1

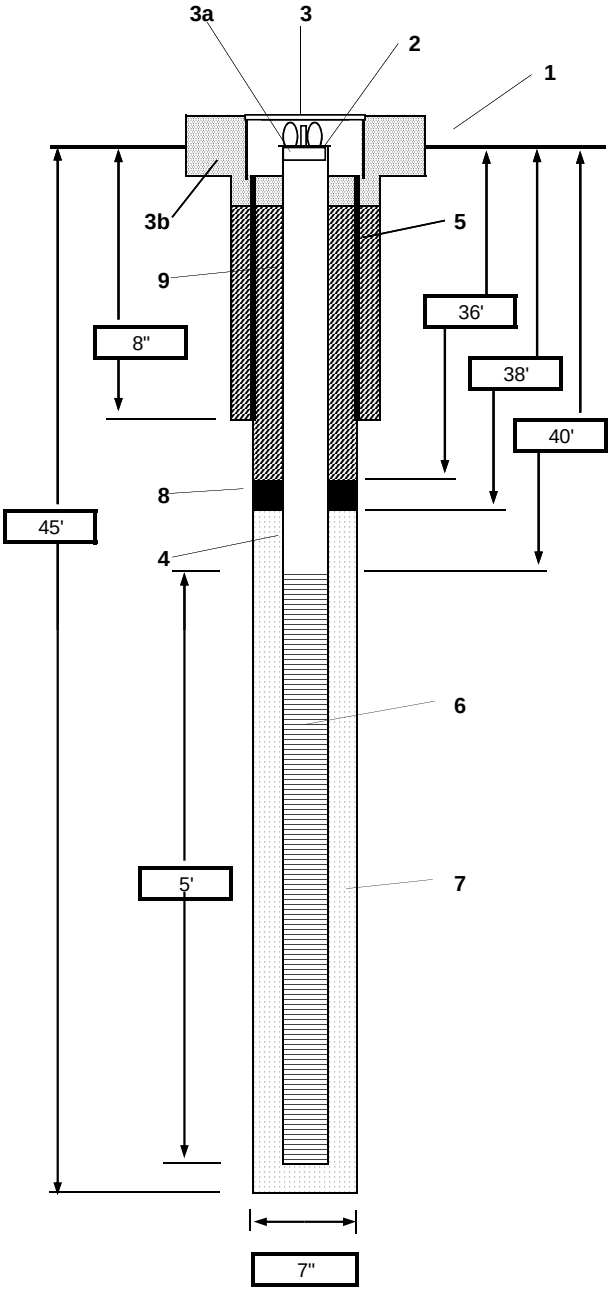
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/3.25 inch hollow stem auger

WATER LEVEL Not Available START : 6/3/2008 END : 6/3/2008 LOGGER : B. Sprouse/CLT



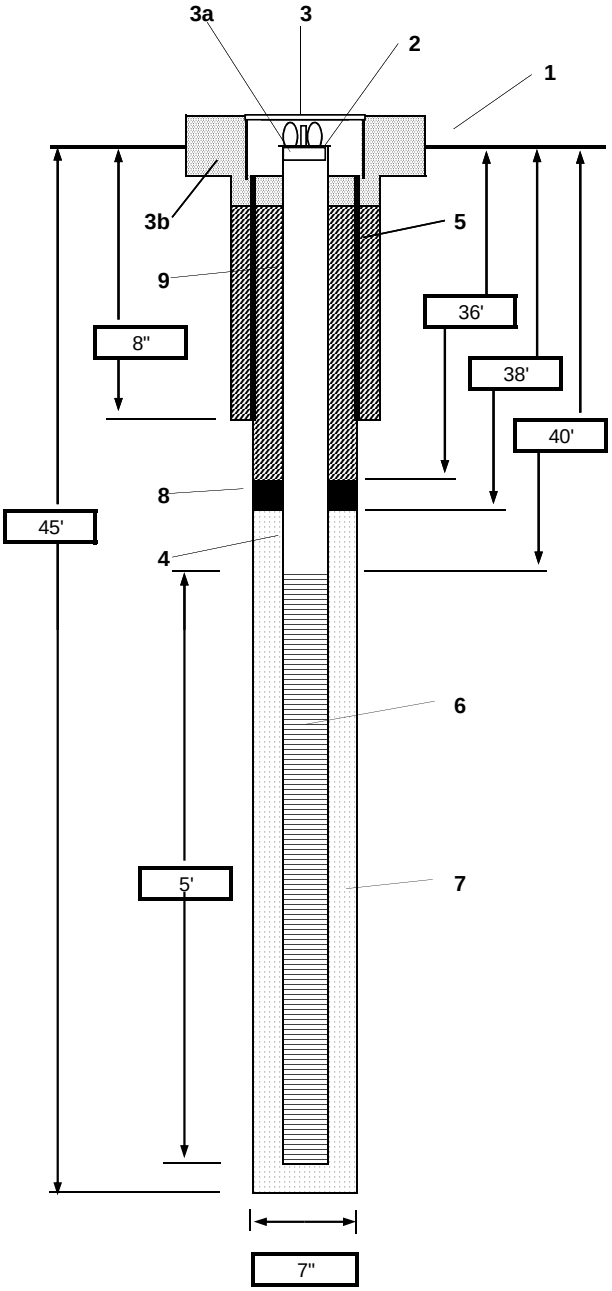
1- Ground elevation at well	16.86 ft msl
2- Top of casing elevation	15.80 ft msl
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	2.5, 50 lb bags
8- Type of seal	bentonite chips
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	1 hr
Estimated purge volume	30 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW55IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River
DRILLING CONTRACTOR : American Environmental Drilling
DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/3.25 inch hollow stem auger
WATER LEVEL Not Available START : 6/4/2008 END : 6/4/08, 1400 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	16.86 ft msl
2- Top of casing elevation	16.72 ft msl
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	1.5, 50 lb bags
8- Type of seal	bentonite chips
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	1 hr
Estimated purge volume	15 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW52	SHEET 1 of 1

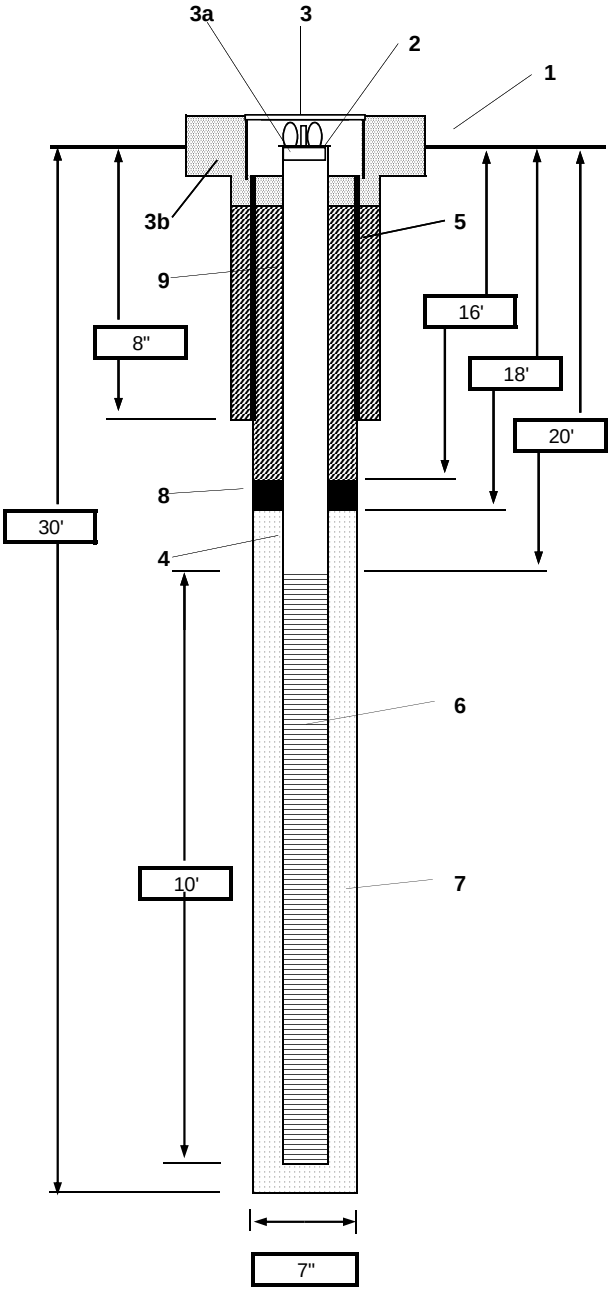
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/3.25 inch hollow stem auger

WATER LEVEL Not Available START : 6/5/2008 END : 6/5/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	19.51 ft msl
2- Top of casing elevation	18.45 ft msl
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
8- Type of seal	3/8" bentonite chips
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	45 min
Estimated purge volume	10 gallons

Comments Purged dry 2x during developement

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW53	SHEET 1 of 1

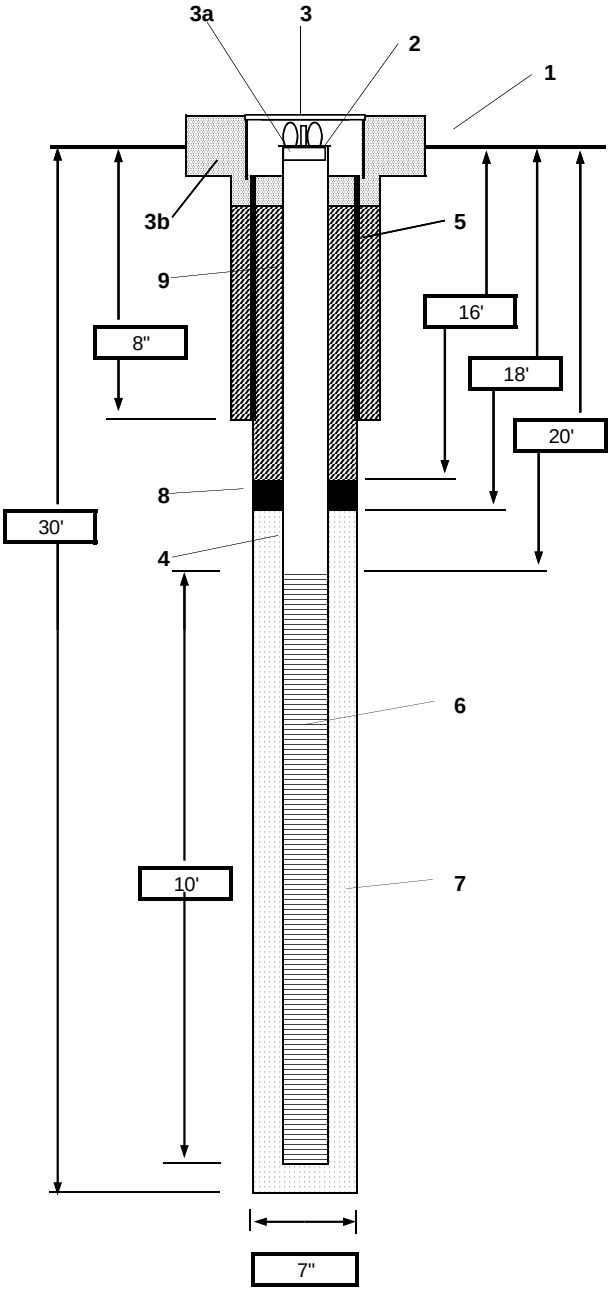
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/3.25 inch hollow stem auger

WATER LEVEL Not Available START : 6/5/2008 END : 6/5/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	19.05 ft msl
2- Top of casing elevation	17.99 ft msl
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
8- Type of seal	bentonite chips
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	30 min
Estimated purge volume	20 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW56IW	SHEET 1 of 1

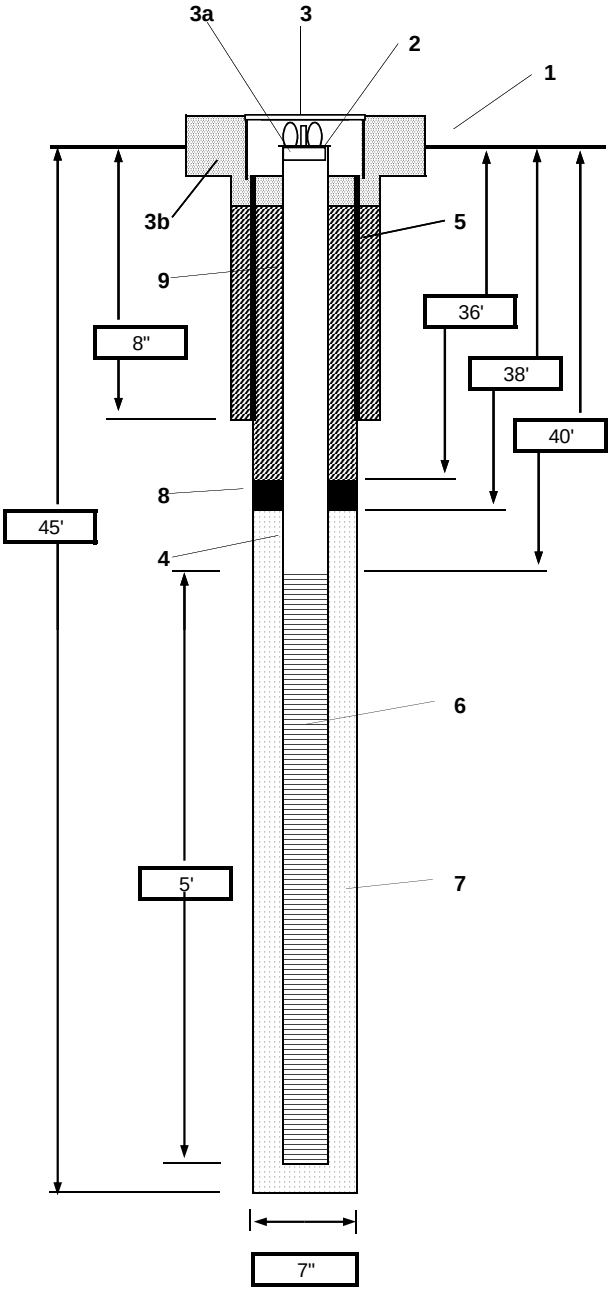
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : Ingersoll Rand A300/3.25 inch hollow stem auger

WATER LEVEL Not Available START: 6/6/2008 END : 6/6/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	17.77 ft msl
2- Top of casing elevation	17.71 ft msl
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	2.5, 50 lb bags
8- Type of seal	bentonite chips
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	30 min
Estimated purge volume	~ 20-25 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW40IW	SHEET 1 of 1

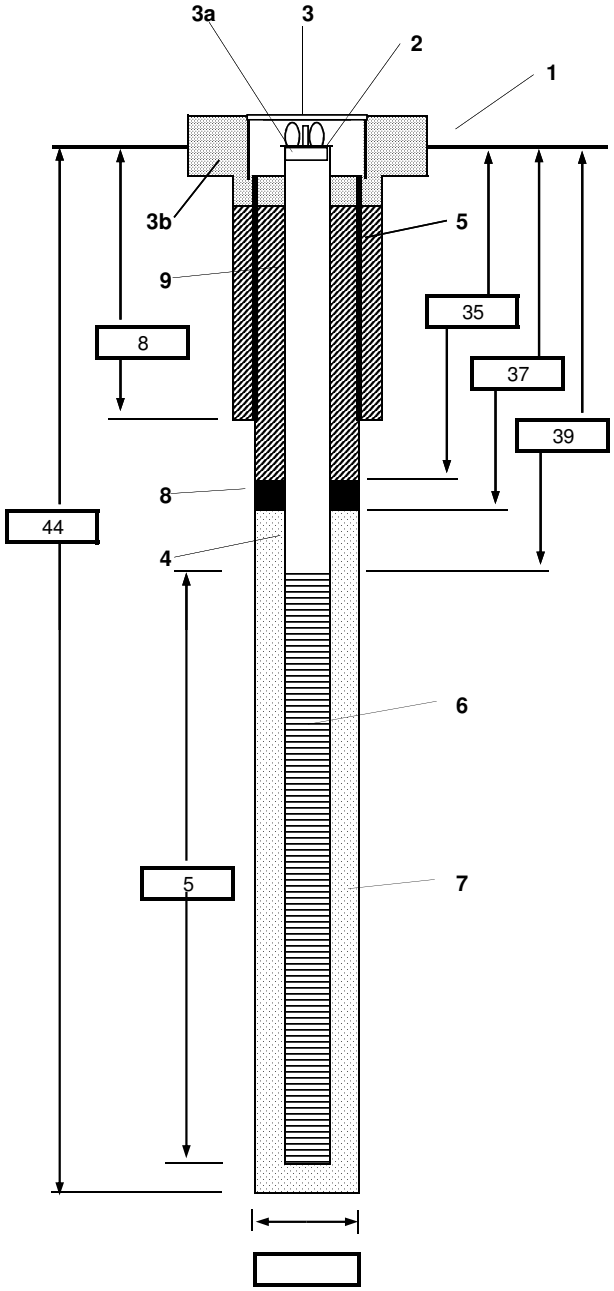
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental

DRILLING METHOD AND EQUIPMENT USED : 4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary

WATER LEVELS : START : 10/27/2008 End: 10/24/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	NA
2- Top of casing elevation	NA
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	
8- Type of seal	3/8" bentonite chips
a) Quantity used	
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	purge and surge
Development time	50 minutes
Estimated purge volume	15 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW41IW	SHEET 1 of 1

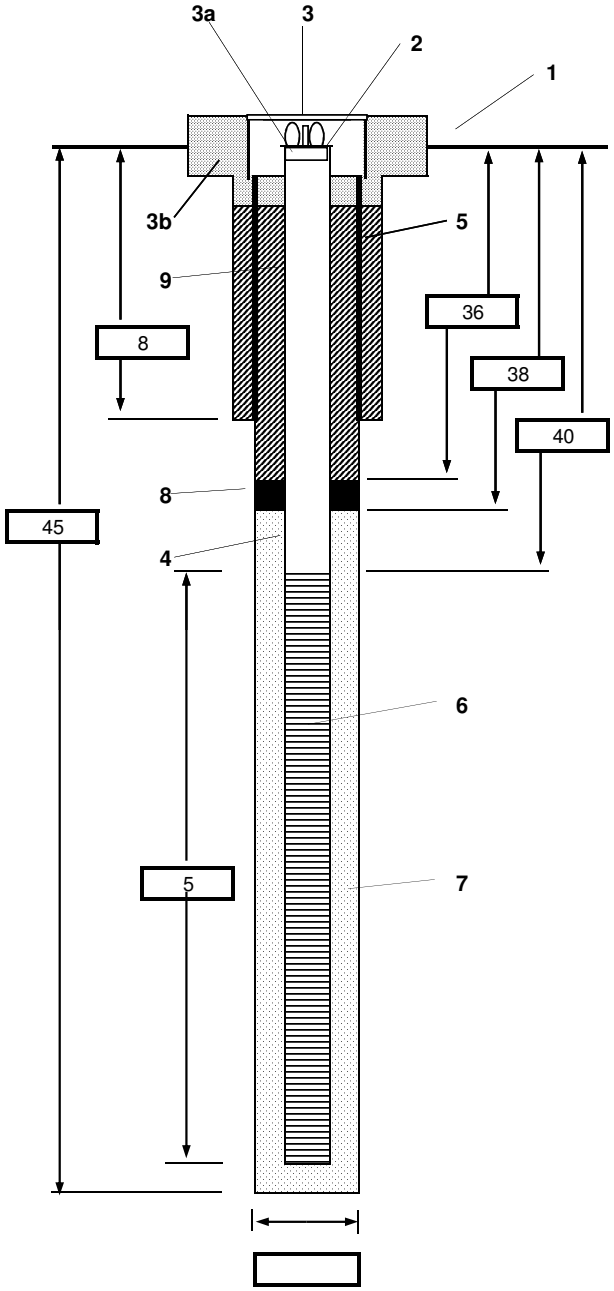
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental

DRILLING METHOD AND EQUIPMENT USED : 4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary

WATER LEVELS : START : 10/27/2008 End: 10/25/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well: NA

2- Top of casing elevation: NA

3- Wellhead protection cover type: 8" manhole
- a) locking expansion plug: 2" locking expansion plug used
- b) concrete pad dimensions: 10 " round

4- Dia./type of well casing: 2" /Sch 40 PVC

5- Dia./type of surface casing: 8" manhole skirt

6- Type/slot size of screen: 2"/0.020" machine slotted PVC

7- Type screen filter: No. 3 sand
- a) Quantity used:

8- Type of seal: 3/8" bentonite chips
- a) Quantity used:

9- Grout
- a) Grout mix used: Bentonite/Grout Slurry
- b) Method of placement: Pump and tremie pipe
- c) Vol. of surface casing grout:
- d) Vol. of well casing grout:

Development method: purge and surge

Development time: 45 minutes

Estimated purge volume: 12 gallons

Comments:

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW53IW	SHEET 1 of 1

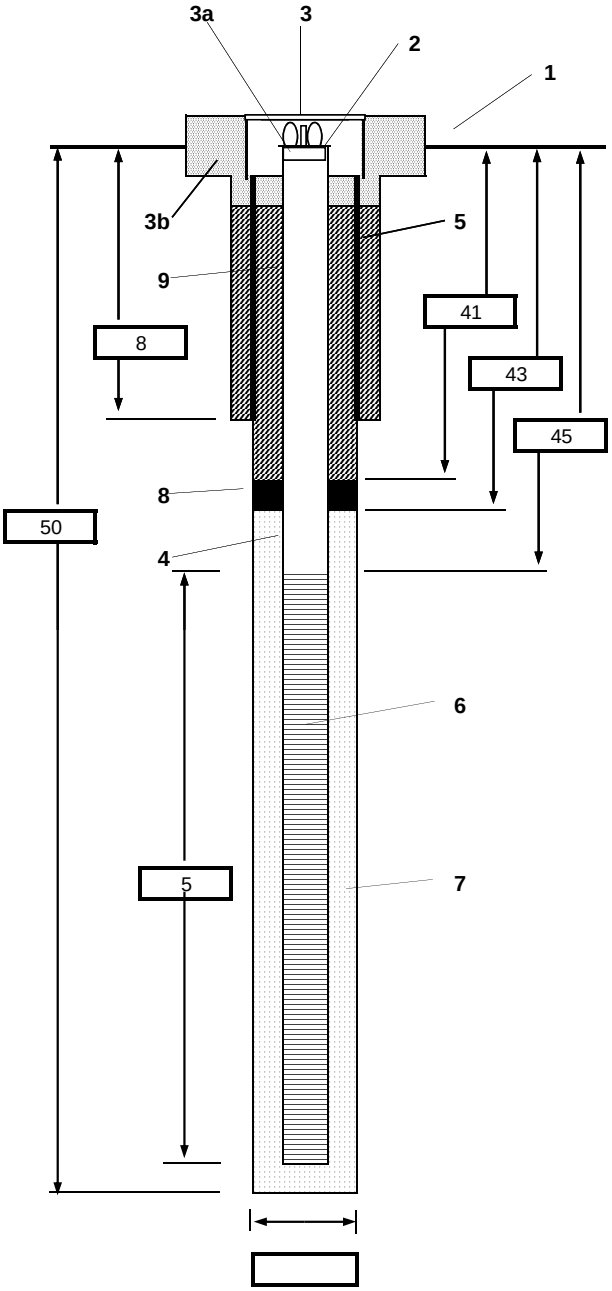
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental

DRILLING METHOD AND EQUIPMENT USED : 4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary

WATER LEVELS : START : 10/26/2008 End: 10/26/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	NA
2- Top of casing elevation	NA
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	
8- Type of seal	3/8" bentonite chips
a) Quantity used	
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	purge and surge
Development time	50 minutes
Estimated purge volume	20 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW52IW	SHEET 1 of 1

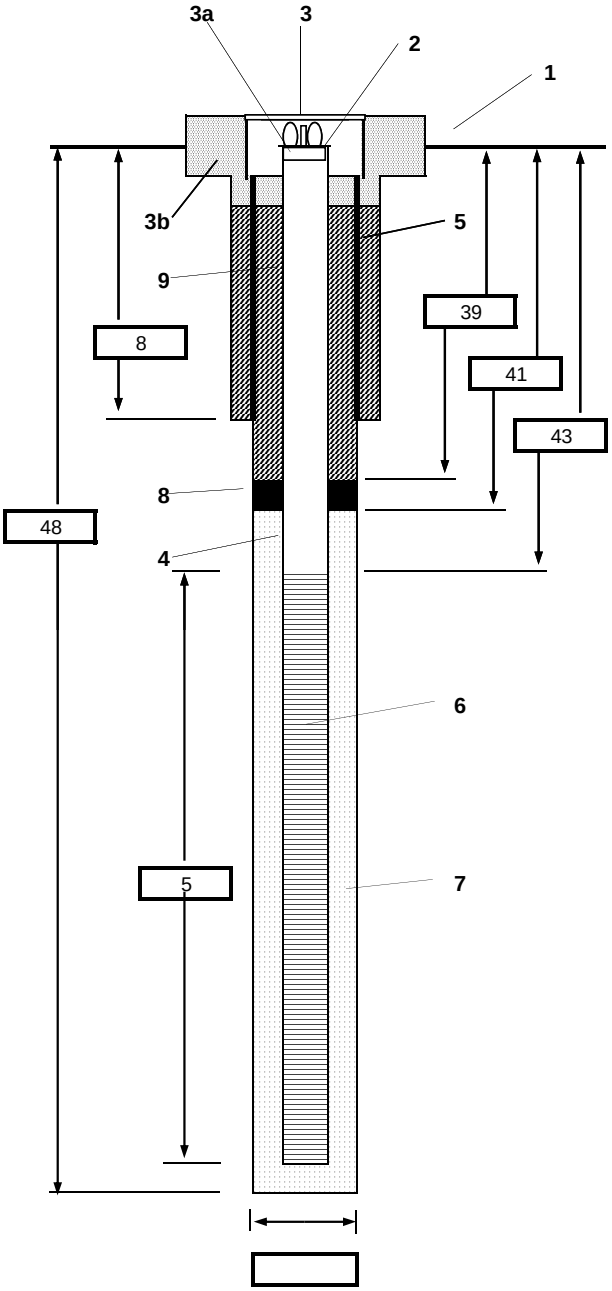
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : American Environmental

DRILLING METHOD AND EQUIPMENT USED : 4.25 inch H S A/24 inch Split Spoon Sampler/ Mud Rotary

WATER LEVELS : START : 10/27/2008 End: 10/27/2008 LOGGER : B. Sprouse/CLT



1- Ground elevation at well	NA
2- Top of casing elevation	NA
3- Wellhead protection cover type	8" manhole
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	10 " round
4- Dia./type of well casing	2" /Sch 40 PVC
5- Dia./type of surface casing	8" manhole skirt
6- Type/slot size of screen	2"/0.020" machine slotted PVC
7- Type screen filter	No. 3 sand
a) Quantity used	
8- Type of seal	3/8" bentonite chips
a) Quantity used	
9- Grout	
a) Grout mix used	Bentonite/Grout Slurry
b) Method of placement	Pump and tremie pipe
Development method	purge and surge
Development time	1 hour
Estimated purge volume	15 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
362251	IR86-MW39	SHEET 1 of 1

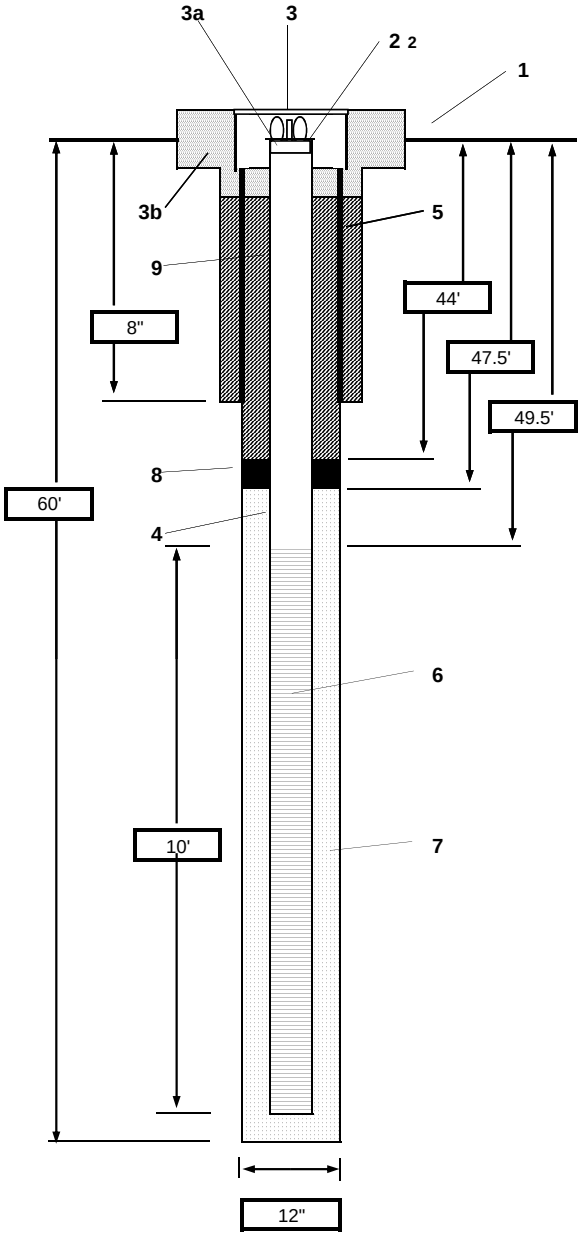
WELL COMPLETION DIAGRAM

PROJECT : Site 86 LOCATION : MCAS New River

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : Sonic SR-2 on International 7600

WATER LEVELS : START : 10/26/2010 END : 10/27/2010 LOGGER : K. Howell/CLT



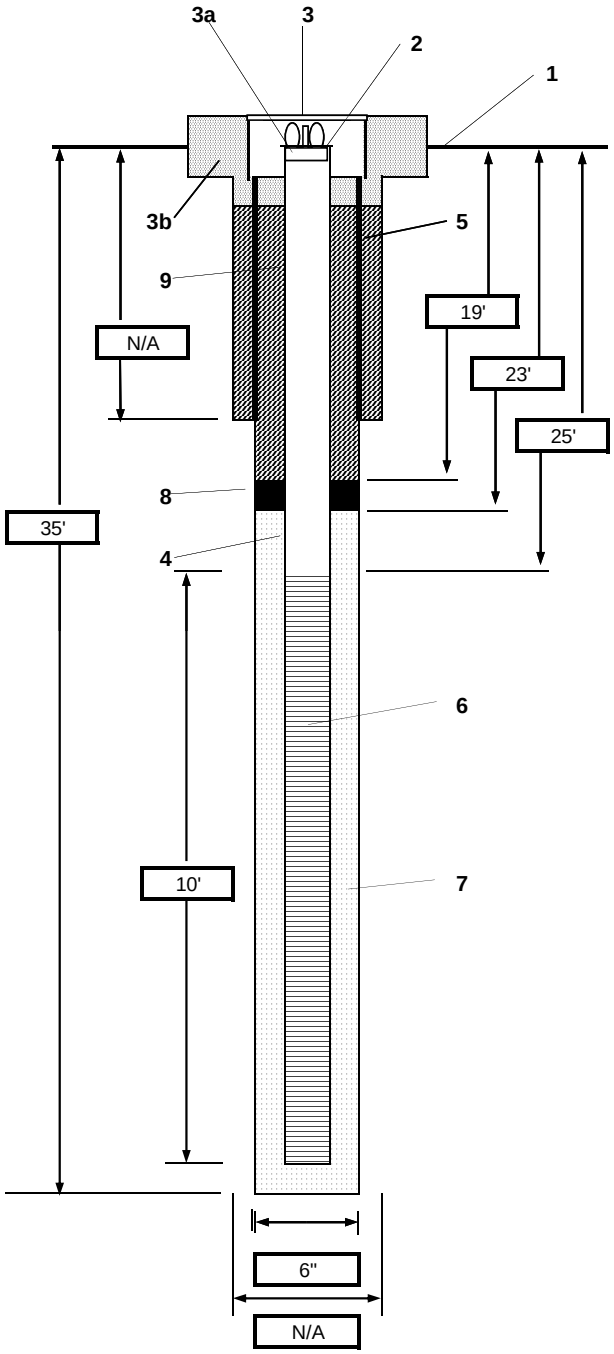
1- Ground elevation at well	16.35 ft msl
2- Top of casing elevation	16.04 ft msl
3- Wellhead protection cover type	12" bolted manhole
a) locking expansion plug	4" locking expansion plug used
b) concrete pad dimensions	2' X 2' (See Field Notes)
4- Dia./type of well casing	4" /Sch 40 PVC
5- Dia./type of surface casing	12" manhole skirt
6- Type/slot size of screen	4"/0.020" machine slotted high flow PVC
7- Type screen filter	030 Filter sand
a) Quantity used	2.5- 100 lbs bags
8- Type of seal	Enviro Plug Medium Chips
a) Quantity used	1- 50 lbs bag
9- Grout	
a) Grout mix used	15 gal water: 2 bags portland
b) Method of placement	tremie pipe
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	NA
Development method	NA
Development time	NA
Estimated purge volume	NA

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW60	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/4/2009 END : 11/4/2009 LOGGER : E. Must/RDU



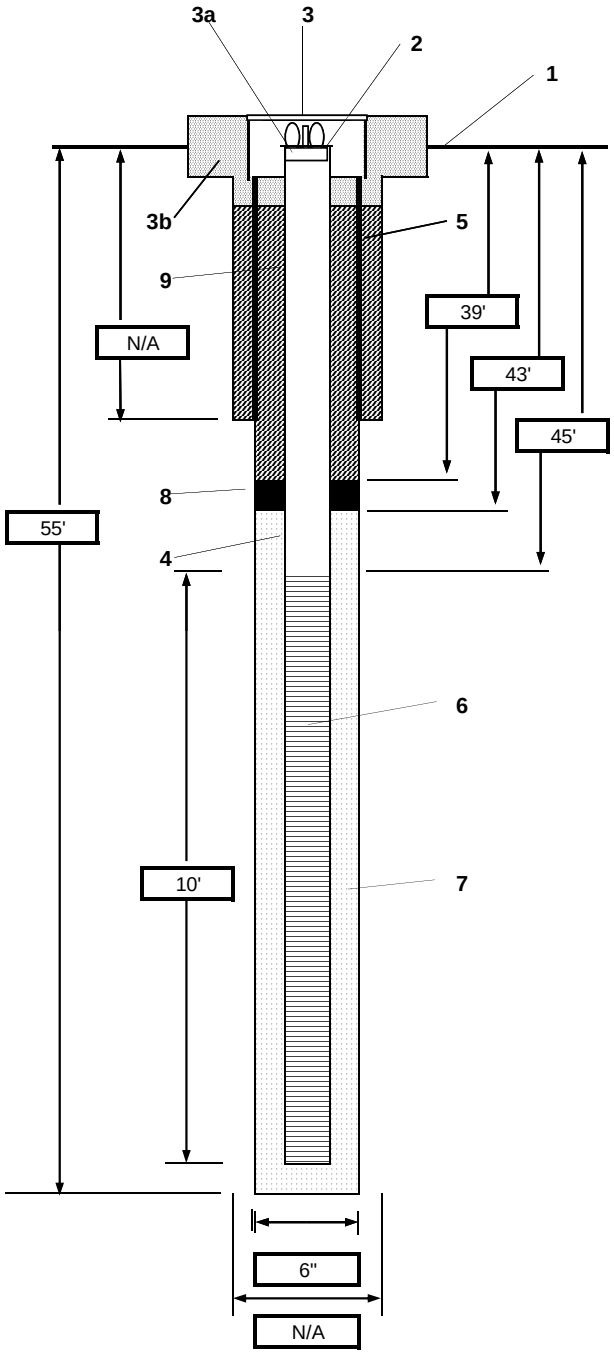
1- Ground elevation at well	12.718 ft msl
2- Top of casing elevation	12.430 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1 (water:Portland)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Pump and surge
Development time	60 min
Estimated purge volume	65 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW60IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/4/2009 END : 11/4/2009 LOGGER : E. Must/RDU



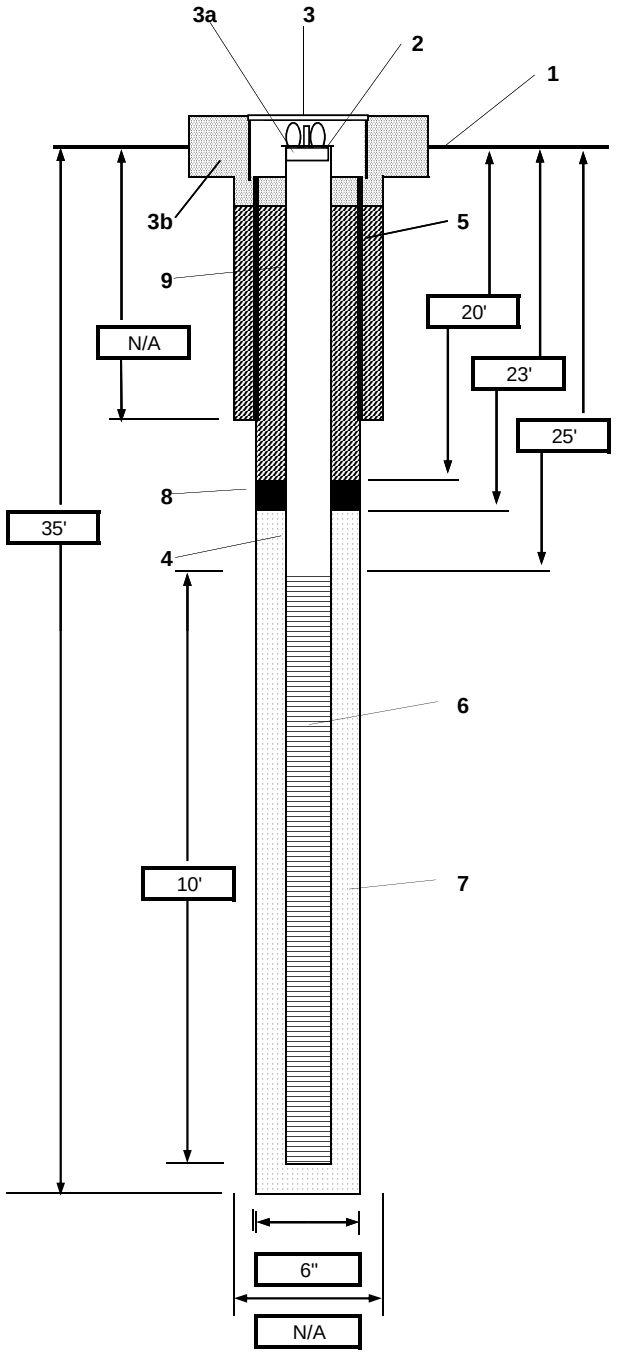
1- Ground elevation at well	12.730 ft msl
2- Top of casing elevation	12.333 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	14:2 (water:Portland)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Pump and surge
Development time	75 min
Estimated purge volume	63 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW64	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/5/2009 END : 11/5/2009 LOGGER : E. Must/RDU



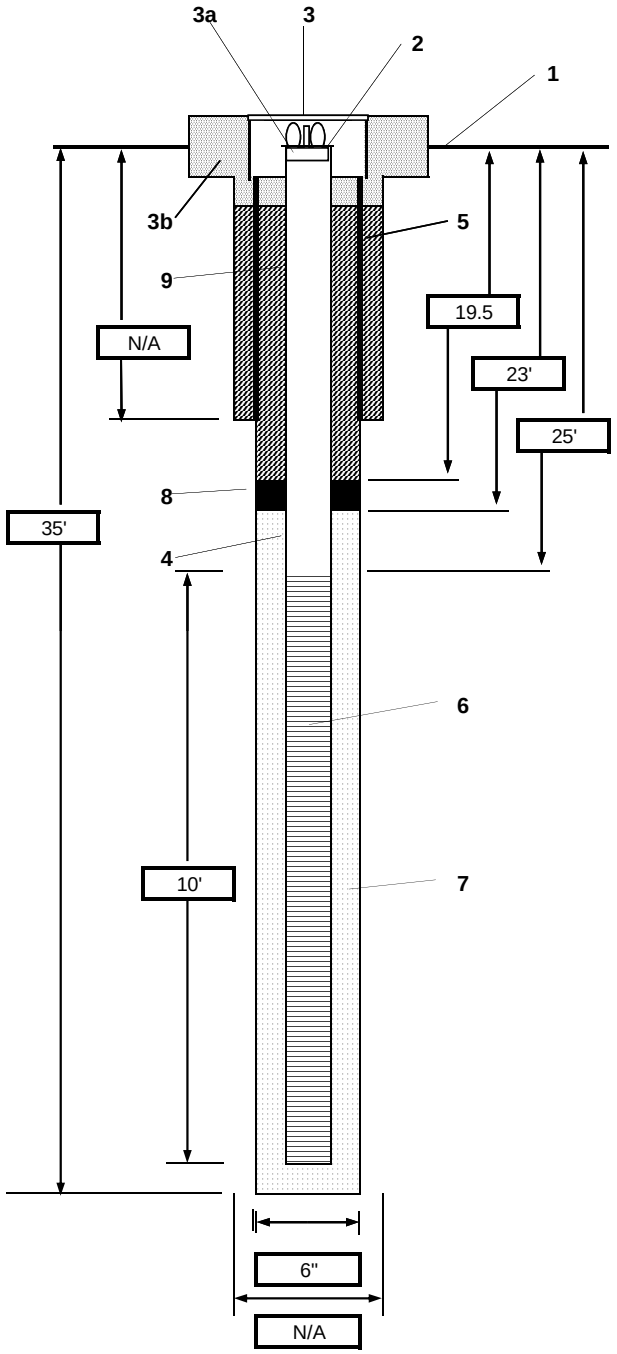
1- Ground elevation at well	7.528 ft msl
2- Top of casing elevation	7.023 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	14:2 (water:Portland)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Over pump and surge
Development time	60 min
Estimated purge volume	43 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW56	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/6/2009 END : 11/6/2009 LOGGER : E. Must/RDU



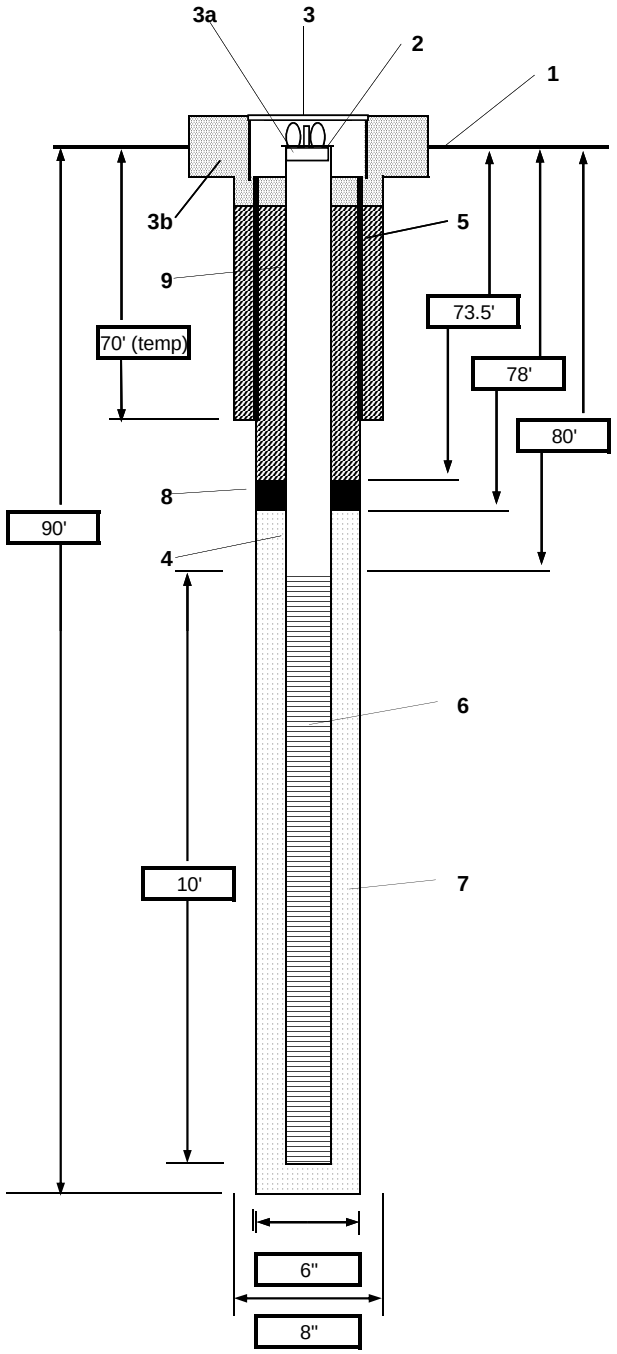
1- Ground elevation at well	15.679 ft msl
2- Top of casing elevation	15.430 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	14:2 (water:Portland)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Over pump and surge
Development time	11/7/2009 50 min
Estimated purge volume	60 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW56DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/6/2009 END : 11/6/2009 LOGGER : E. Must/RDU



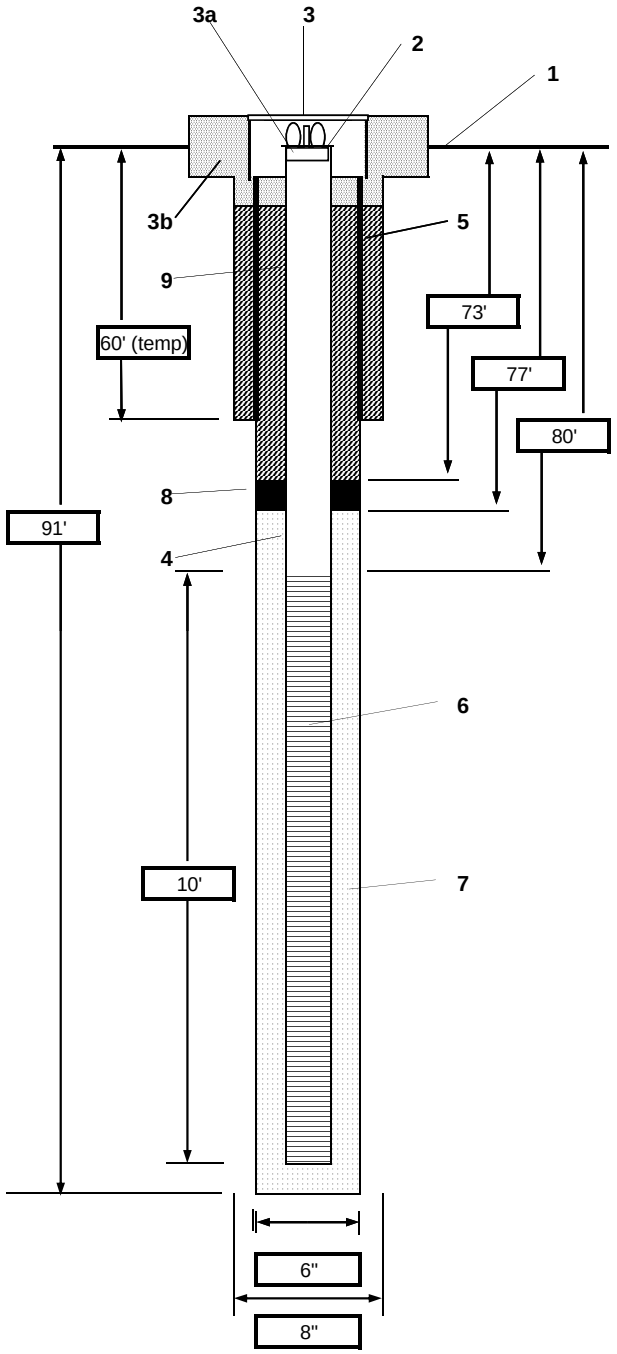
1- Ground elevation at well	15.632 ft msl
2- Top of casing elevation	15.275 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	8" Temporary Isolation Steel Casing
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	3 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	28:4 (water:Portland)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Over pump and surge
Development time	11/9/2009 75 min
Estimated purge volume	75 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW58DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/7/2009 END : 11/7/2009 LOGGER : J. Frank/RDU



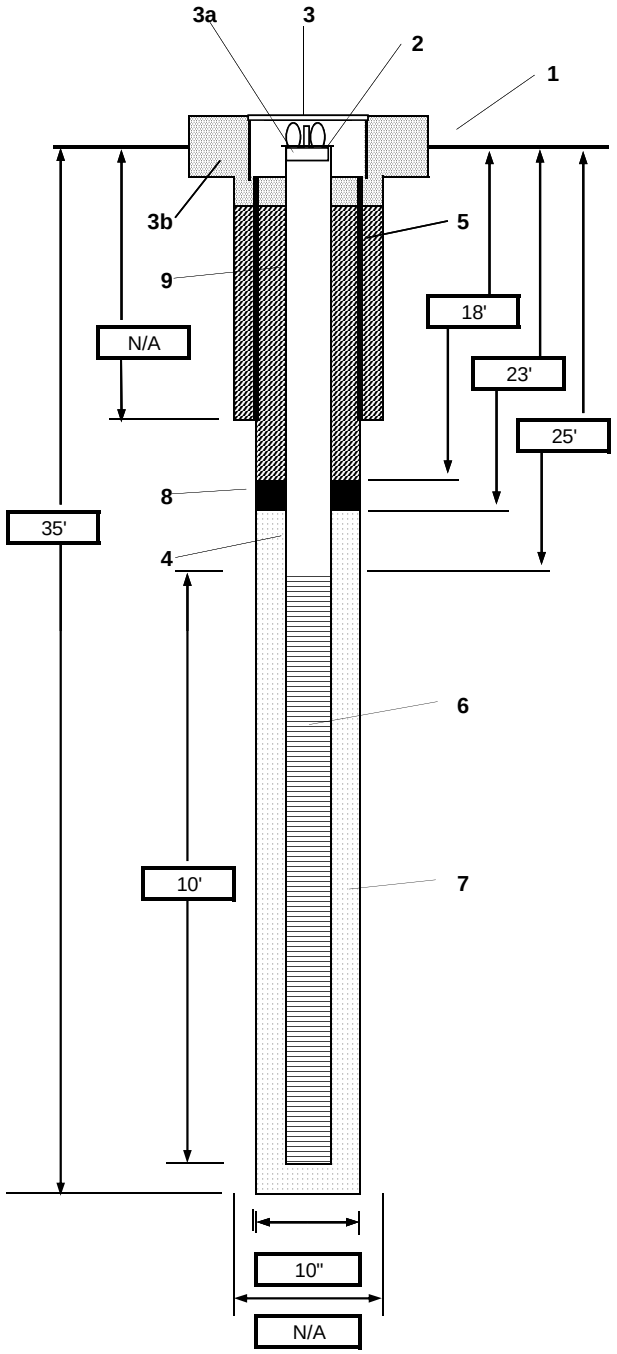
1- Ground elevation at well	17.383 ft msl
2- Top of casing elevation	16.971 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	8" Temporary Isolation Steel Casing
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	Portland + high yield bentonite+water
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Pump and surge
Development time	60 min
Estimated purge volume	60 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW59	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/8/2009 END : 11/8/2009 LOGGER : J. Frank/RDU



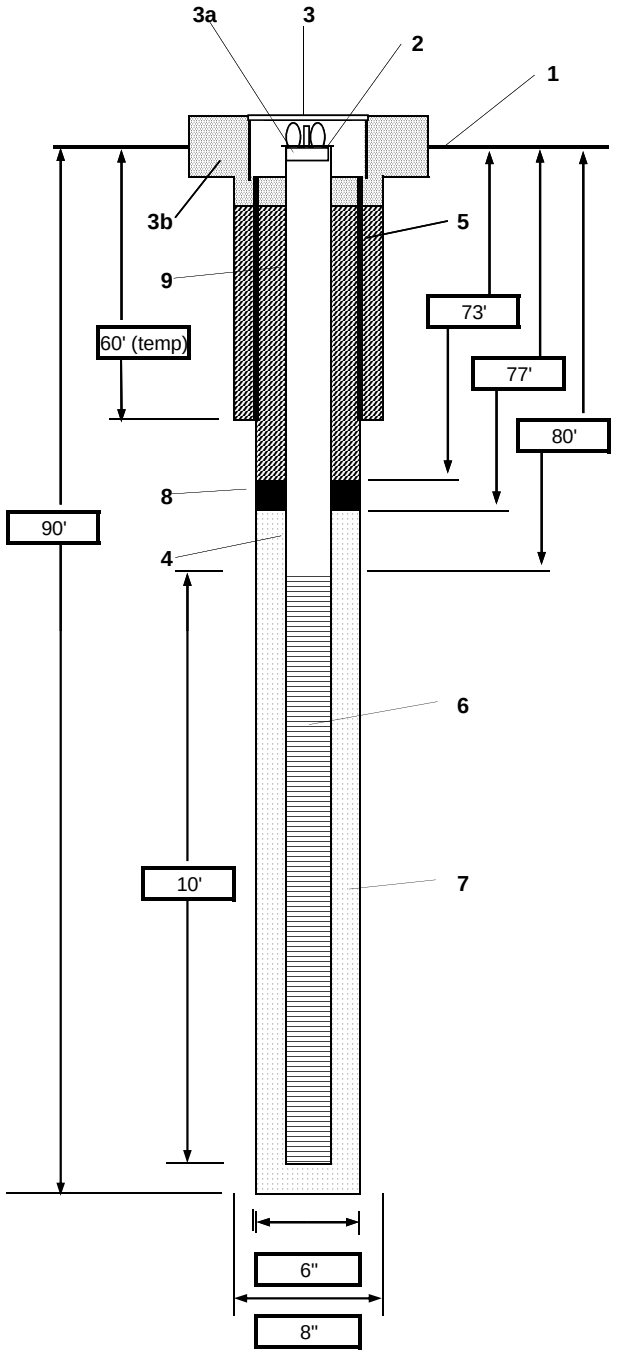
1- Ground elevation at well	12.587 ft msl
2- Top of casing elevation	12.097 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4.5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	Enviroplug Medium
b) Method of placement	Pour
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Pump and surge
Development time	60 min
Estimated purge volume	65 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW59DW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/8/2009 END : 11/8/2009 LOGGER : J. Frank/RDU



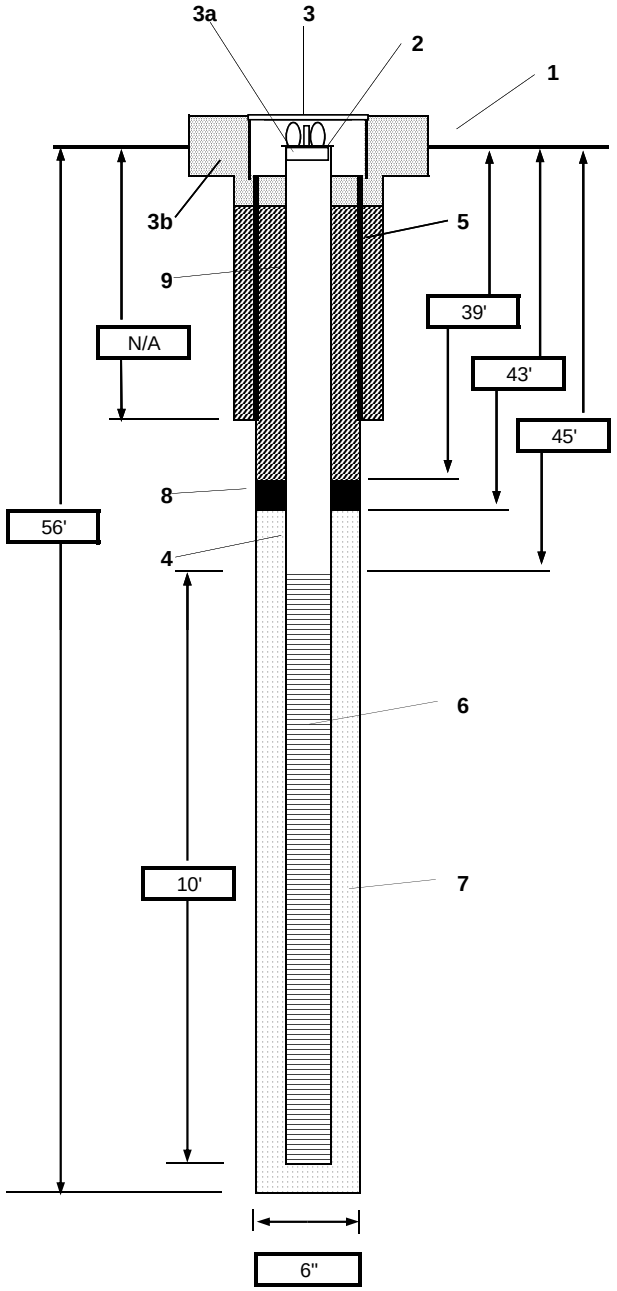
1- Ground elevation at well	12.546 ft msl
2- Top of casing elevation	12.176 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	8" Temporary Isolation Steel Casing
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	Portland + high yield + water
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	N/A
d) Vol. of well casing grout	80 gallons
Development method	Pump and surge
Development time	70 min
Estimated purge volume	70 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW59IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/8/2009 END : 11/8/2009 LOGGER : J. Frank/RDU



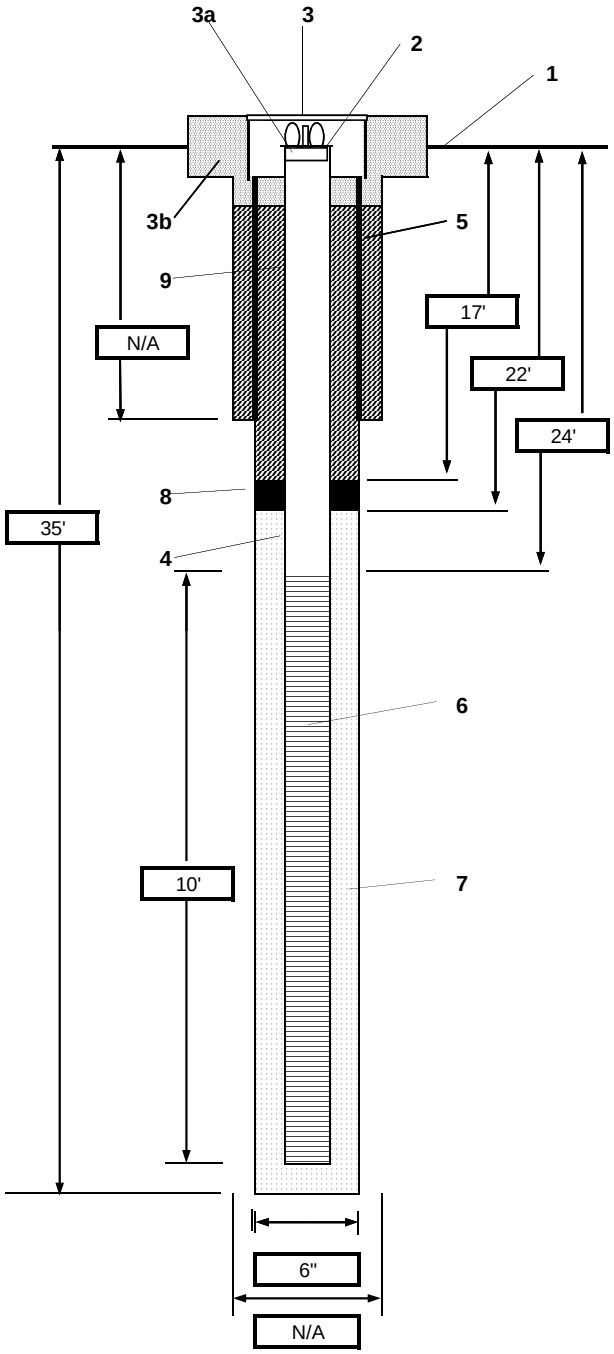
1- Ground elevation at well	12.679 ft msl
2- Top of casing elevation	12.411 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2'x2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4.5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	Portland + high yield + water
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	N/A
d) Vol. of well casing grout	55 gallons
Development method	Pump and surge
Development time	60 min
Estimated purge volume	85 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW58	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/23/2009 END : 11/23/2009 LOGGER : C LeBlanc/BTR



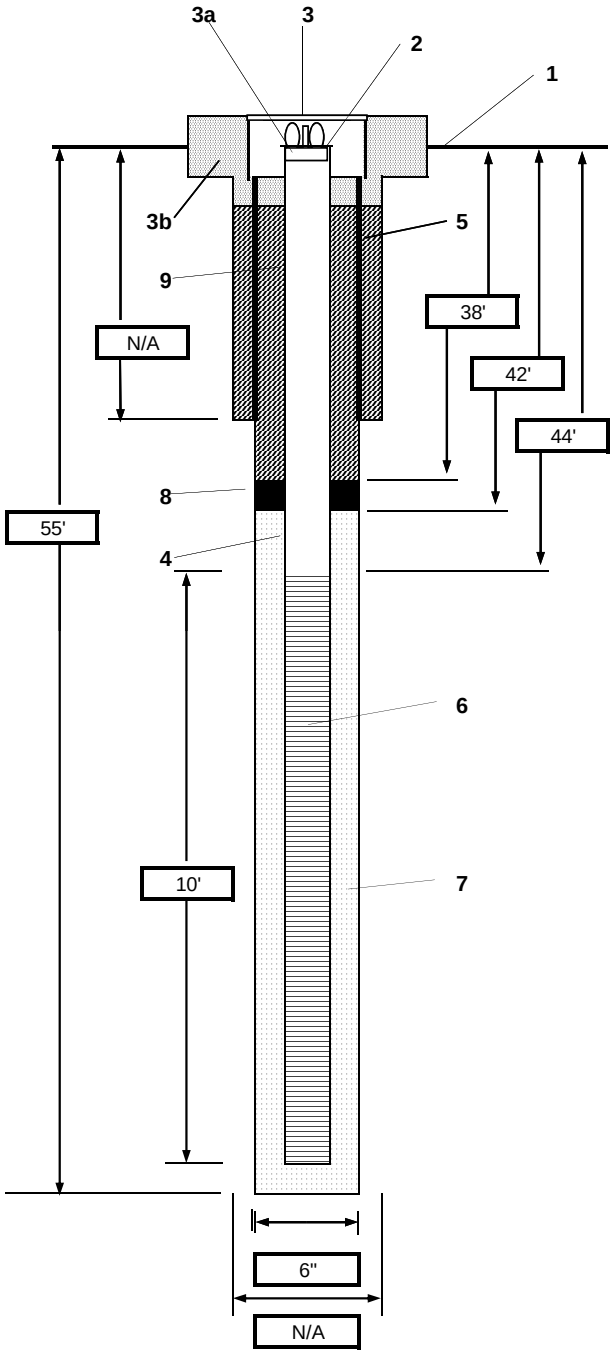
1- Ground elevation at well	17.438 ft msl
2- Top of casing elevation	16.831 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4.5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pour
c) Vol. of surface casing grout	
d) Vol. of well casing grout	20 gallons
Development method	Pump and Surge
Development time	50 min
Estimated purge volume	42 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW58IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 11/23/2009 END : 11/23/2009 LOGGER : C LeBlanc/BTR



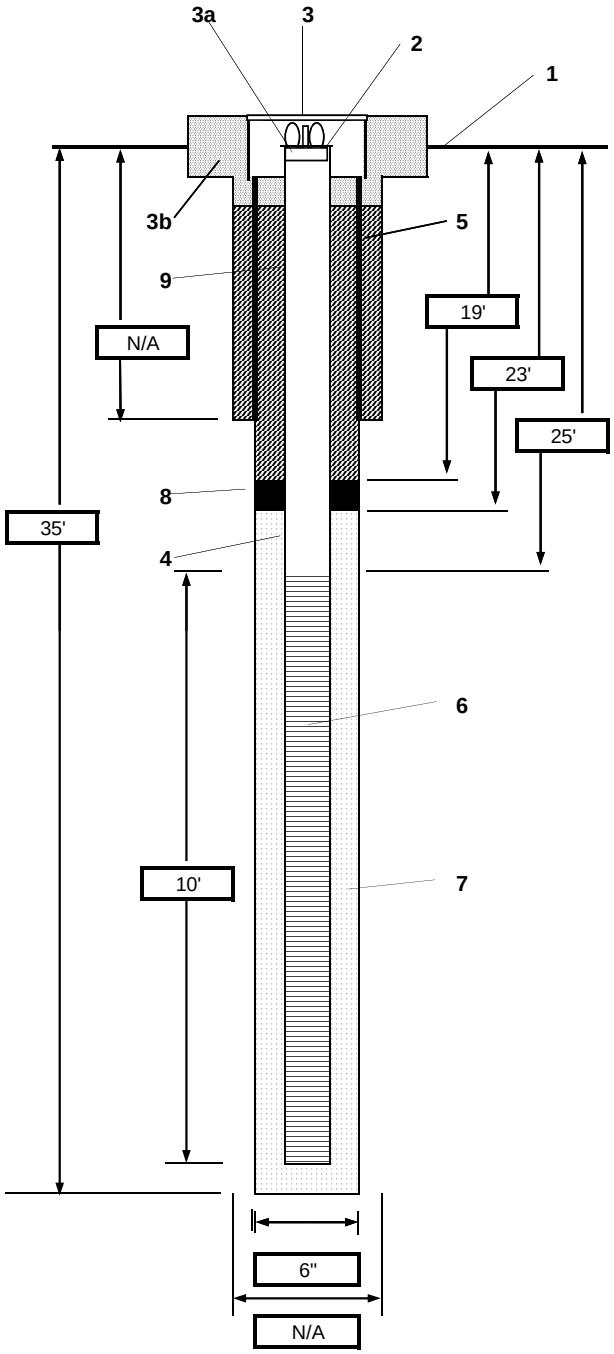
1- Ground elevation at well	17.366 ft msl
2- Top of casing elevation	16.887 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	4.5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	46 gallons
Development method	Pump and Surge
Development time	50 min
Estimated purge volume	51 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW62	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/1/2009 END : 12/1/2009 LOGGER : C LeBlanc/BTR



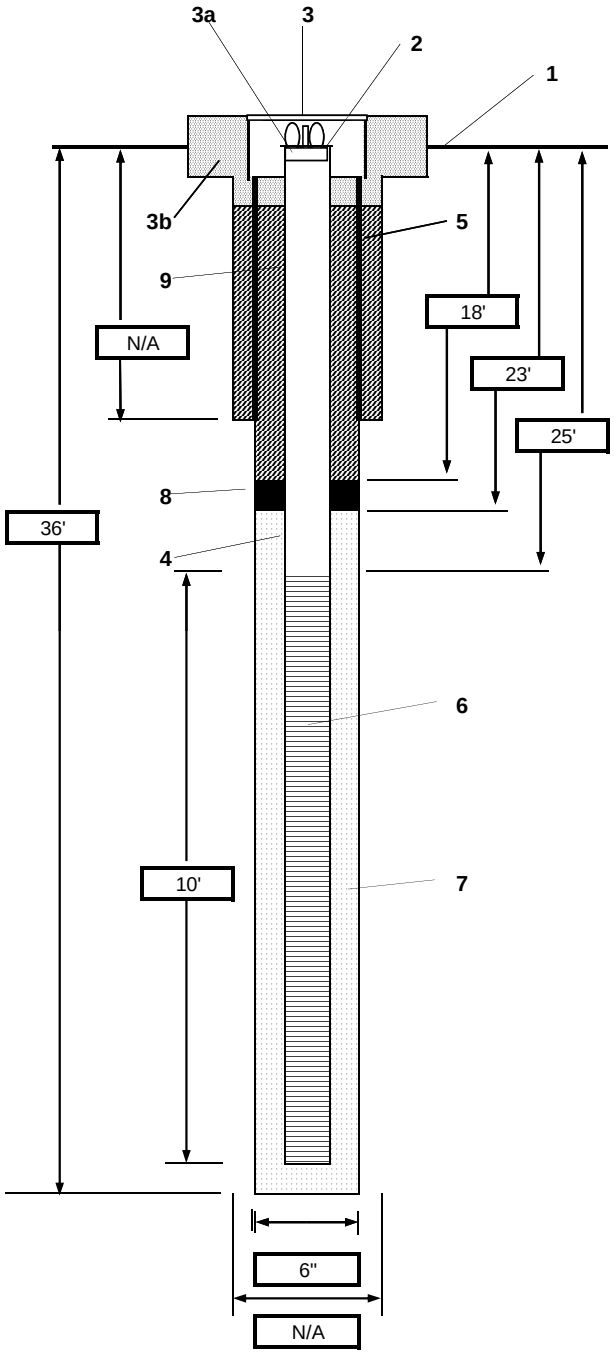
1- Ground elevation at well	13.375 ft msl
2- Top of casing elevation	13.040 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pour
c) Vol. of surface casing grout	
d) Vol. of well casing grout	23 gallons
Development method	Pump and Surge
Development time	60 min
Estimated purge volume	48 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW63	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/1/2009 END : 12/1/2009 LOGGER : C LeBlanc/BTR



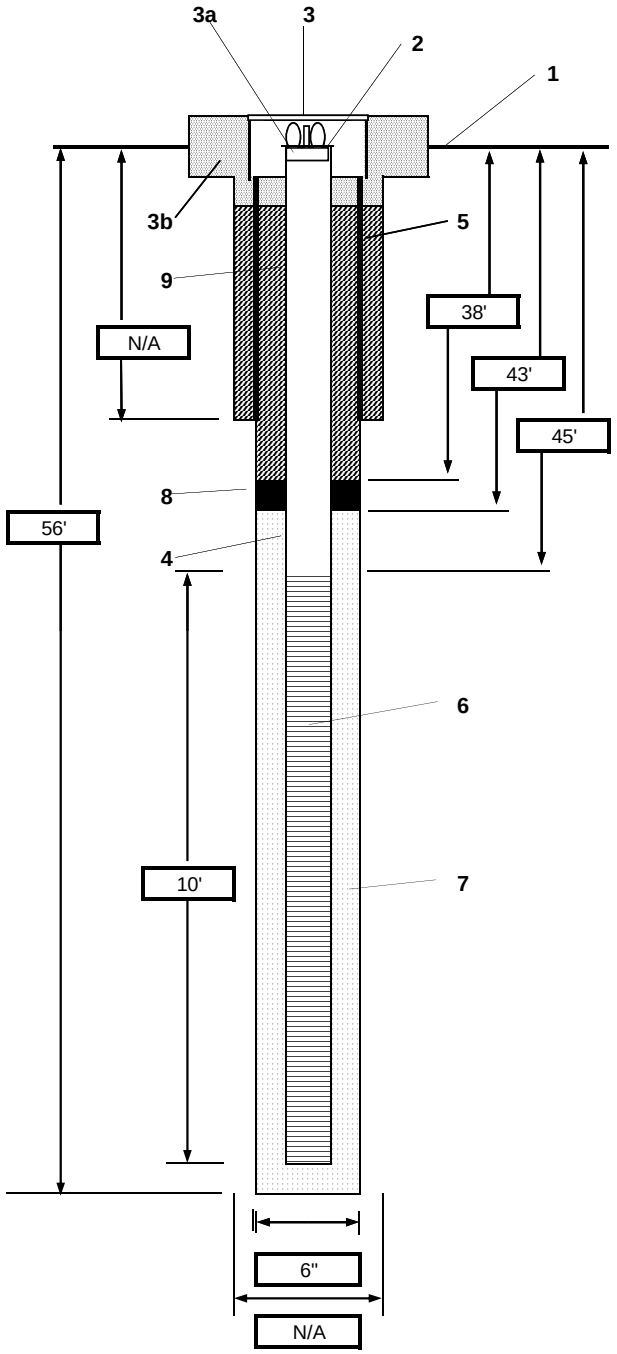
1- Ground elevation at well	12.524 ft msl
2- Top of casing elevation	12.148 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pour
c) Vol. of surface casing grout	
d) Vol. of well casing grout	22 gallons
Development method	Pump and Surge
Development time	50 min
Estimated purge volume	60 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW63IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/1/2009 END : 12/1/2009 LOGGER : C LeBlanc/BTR



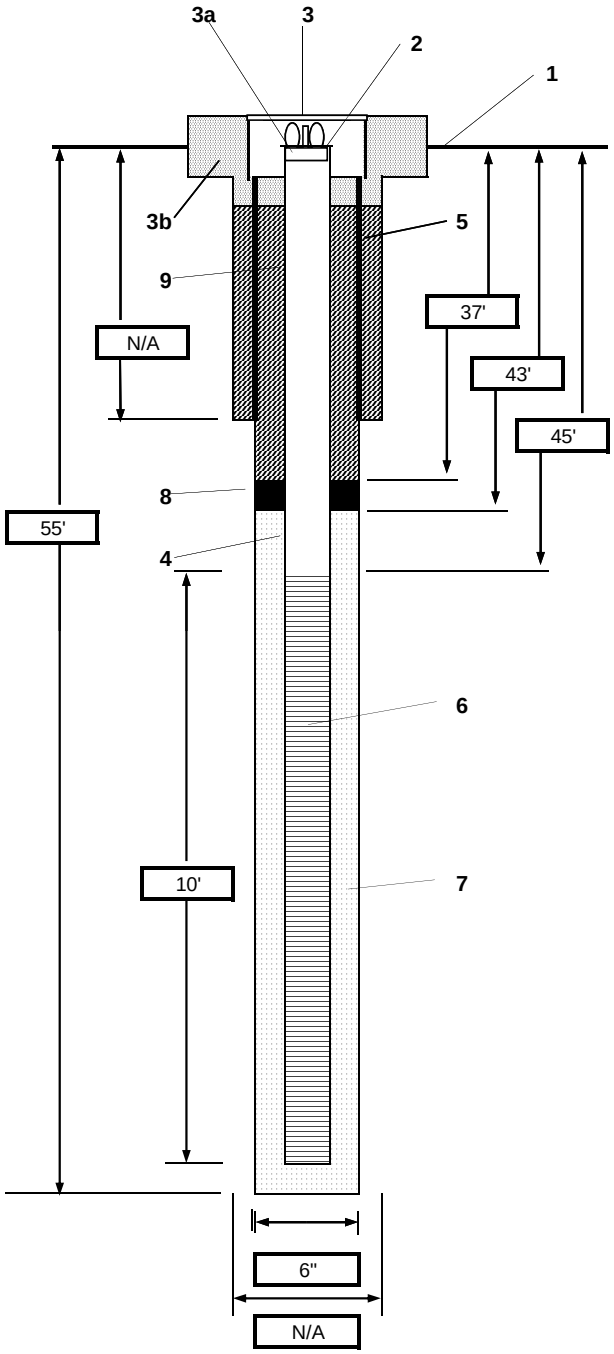
1- Ground elevation at well	12.546 ft msl
2- Top of casing elevation	12.206 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	46 gallons
Development method	Pump and Surge
Development time	70 min
Estimated purge volume	90 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW61IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/4/2009 END : 12/4/2009 LOGGER : C LeBlanc/BTR



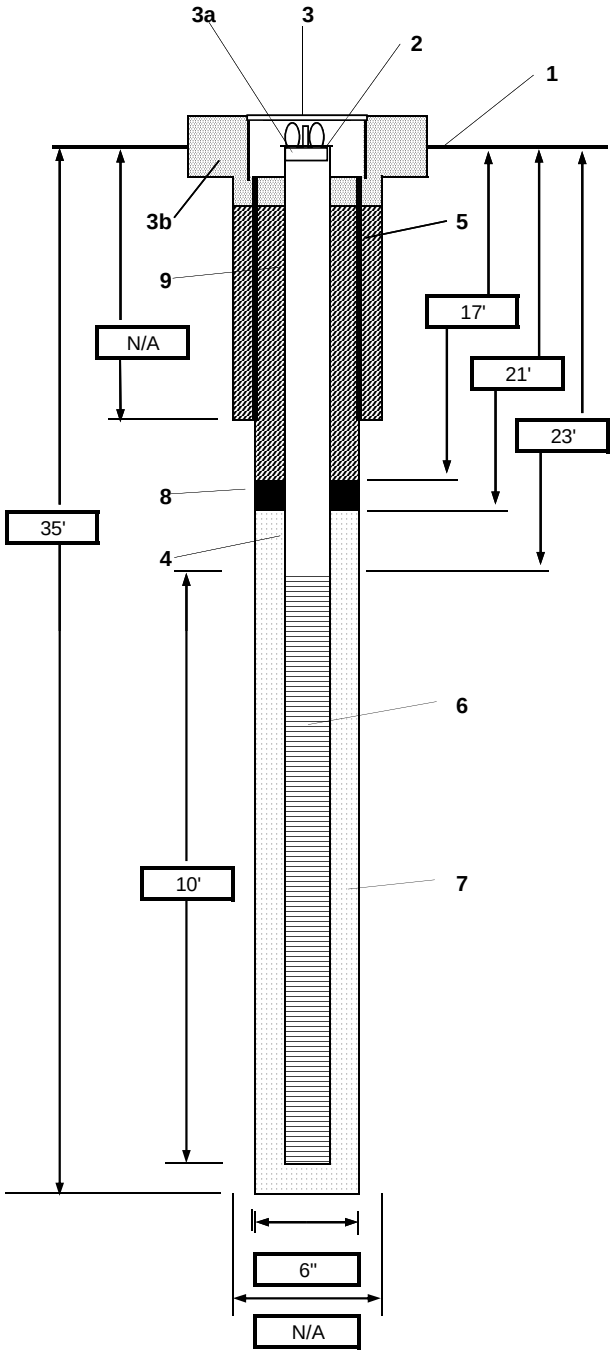
1- Ground elevation at well	13.207 ft msl
2- Top of casing elevation	12.794 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	45 gallons
Development method	Pump and Surge
Development time	60 min
Estimated purge volume	30 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW61	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/4/2009 END : 12/4/2009 LOGGER : C LeBlanc/BTR



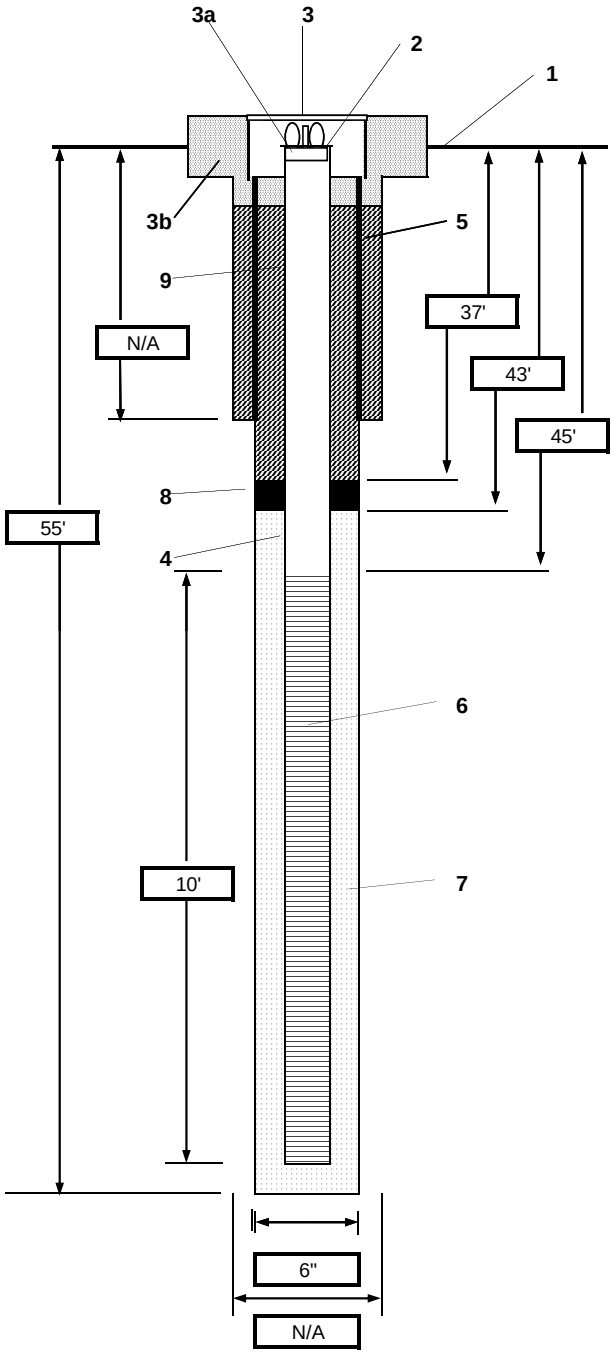
1- Ground elevation at well	13.047 ft msl
2- Top of casing elevation	12.609 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	20 gallons
Development method	Pump and Surge
Development time	60 min
Estimated purge volume	54 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW61IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 12/4/2009 END : 12/4/2009 LOGGER : C LeBlanc/BTR



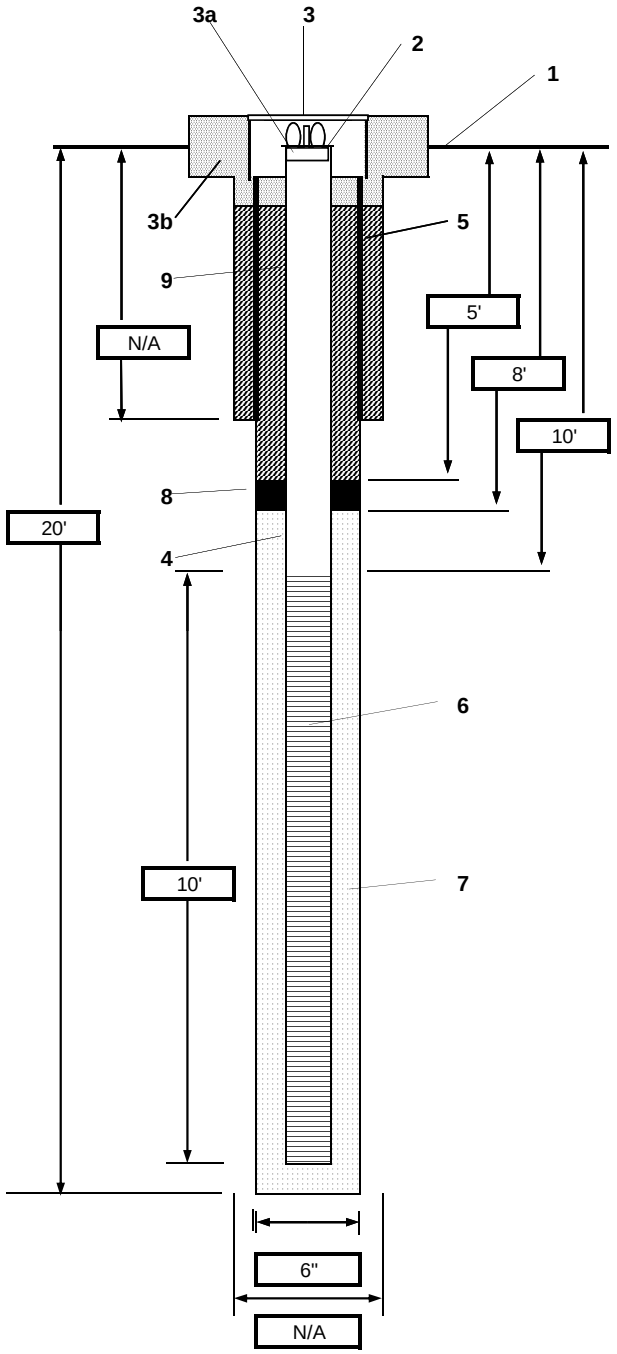
1- Ground elevation at well	13.207 ft msl
2- Top of casing elevation	12.794 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	5 bags (50 lb/bag)
8- Type of seal	Enviroplug Meduim
a) Quantity used	1 bag (50 lb/bag)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pump via Tremie
c) Vol. of surface casing grout	
d) Vol. of well casing grout	45 gallons
Development method	Pump and Surge
Development time	60 min
Estimated purge volume	30 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW65	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Groundwater Protection Inc.
DRILLING METHOD AND EQUIPMENT USED Sonic SR-2 on International 7600
WATER LEVELS : START : 3/18/2010 END : 3/18/2010 LOGGER : K. Howell/CLT



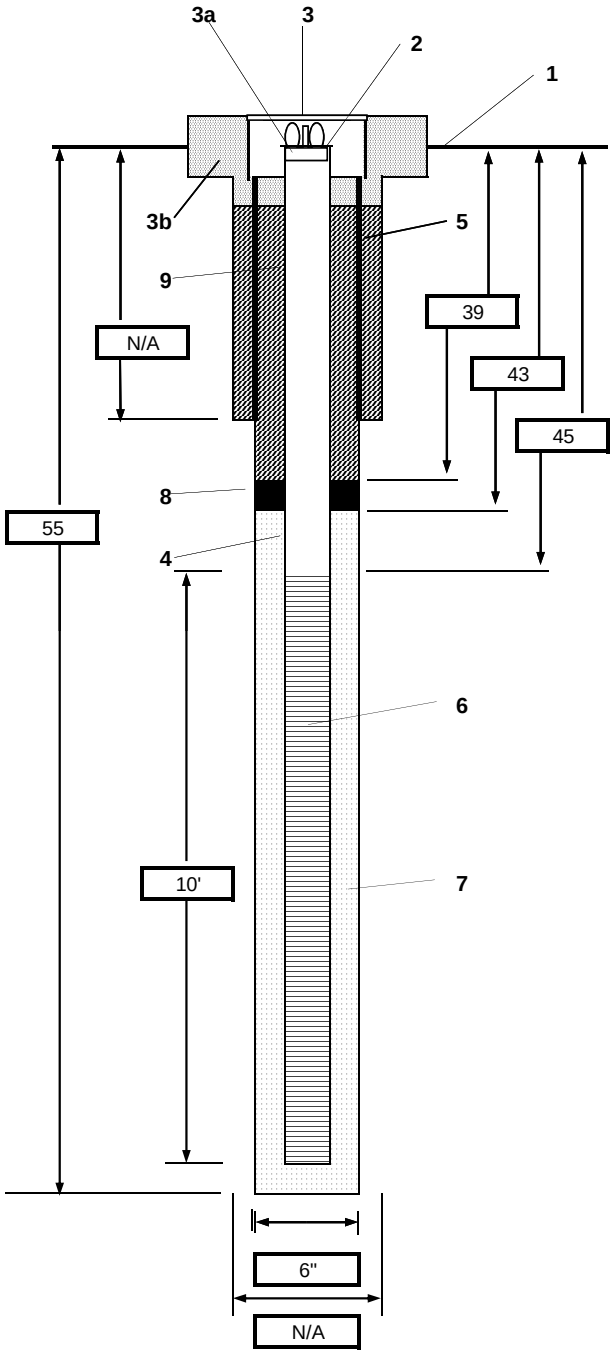
1- Ground elevation at well	8.591 ft msl
2- Top of casing elevation	8.591 ft msl
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	2" locking expansion plug used
b) concrete pad dimensions	2' x 2'
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	N/A
6- Type/slot size of screen	2" Schedule 40 PVC 0.010 Machine Slot
7- Type screen filter	No. 2 Filter Sand
a) Quantity used	2.5 bags (50 lb/bag)
8- Type of seal	3/8" Bentonite Chips
a) Quantity used	0.5 bucket (5 gallon bucket)
9- Grout	
a) Grout mix used	7:1:1/20 (water:Portland:bentonite)
b) Method of placement	Pour
c) Vol. of surface casing grout	
d) Vol. of well casing grout	
Development method	Over pump and Surge
Development time	45 min
Estimated purge volume	35 gallons

Comments

PROJECT NUMBER	WELL NUMBER	
389017	IR86-MW66IW	SHEET 1 of 1

WELL COMPLETION DIAGRAM

PROJECT : CTO-081 Site 86 Supplimental Remedial Investiagati LOCATION : MCAS New River Flightline
DRILLING CONTRACTOR : Parratt Wolff, Inc.
DRILLING METHOD AND EQUIPMENT USED IR A300 4.25 HSA
WATER LEVELS : 6.04 6/2/2010 START : 6/1/2010 END : 6/1/2010 LOGGER : K.Howell/CLT



1- Ground elevation at well	NS
2- Top of casing elevation	NS
3- Wellhead protection cover type	Flush Mount
a) locking expansion plug	NA
b) concrete pad dimensions	2' x 21
4- Dia./type of well casing	2" Schedule 40 PVC
5- Dia./type of surface casing	NA NA
6- Type/slot size of screen	0.010 Machine Slot 10' section
7- Type screen filter	DSI Gravel Pack GP#1
a) Quantity used	Seven Bags
8- Type of seal	Enviroplug sodium - bentonite chips
a) Quantity used	1 bag 50lb
9- Grout	94lb sacks, 3 bags/30 gallons water +
a) Grout mix used	5 lb bentonite
b) Method of placement	tremie
c) Vol. of surface casing grout	NA
d) Vol. of well casing grout	35/40 gallons
Development method	surge block and pump
Development time	6/1/10 1545 to 6/2/10 0815
Estimated purge volume	160 gallons

Comments some heave from hand augers entered borehole during bentonite seal placement, add extra bentonite to get better seal, well developed before grouting. Grout placed next day to surface.

Well Construction Records

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) SWMU318-MW04R

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/8/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☐Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐GPS ☒Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 30.0'

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

From	To	Ft.	Diameter	Thickness/ Weight	Material
0	20		2"	SCH 40	PVC

7. GROUT:

From	To	Ft.	Material	Method
0	13		PORTLAND	TREMIE
13	18		BENTONITE	TREMIE

8. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
20	30		2 in.	.010 in.	PVC
			in.	in.	
			in.	in.	

9. SAND/GRAVEL PACK:

From	To	Ft.	Size	Material
18	30		#1	SAND

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, wet, loose, coarse SAND some silt
10.0	12.0	Light brown, wet, loose, coarse SAND; some clay

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Gregory Ellingworth II 12/14/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Gary Ellingworth II
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW-40

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/7/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 20	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 13	Ft.	PORTLAND	TREMIE
From 13	To 18	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 20	To 30	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18	To 30	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
10.0	12.0'	Light brown, wet, loose, coarse SAND some silt
25.0	27.0	White/gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3404

1. WELL CONTRACTOR:

Wesley W. Herman
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW-40 IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 10/24/08

TIME COMPLETED 2:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 34° 43.088

LONGITUDE 077° 26.897

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 45

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 7.5 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION**: **Type** Amount

g. **WATER ZONES** (depth):

From To From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 40	Ft.	2"	sch 40	pvc
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 34	Ft.	portland	tremie
From 34	To 37	Ft.	Bentonite	tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 40	To 45	Ft.	2" in.	.010 in.	pvc
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 37	To 45	Ft.	# 3	gravel
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0	5	Brown sand
5	29	Grey sandy clay
29	45	Brownish grey sandy clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10/29/08

Wesley W. Herman
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW-41

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/7/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 3.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 20	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 13	Ft.	PORTLAND	TREMIE
From 13	To 18	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 20	To 30	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18	To 30	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, wet, loose, medium/coarse SAND; some silt
25.0	27.0	White/gray, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3404

1. WELL CONTRACTOR:

Wesley W. Herman
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW-41 IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 10/25/08

TIME COMPLETED 3:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 34° 43.017
LONGITUDE 077° 26.857

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 45

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION**: **Type** Amount

g. **WATER ZONES** (depth):
From To From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 40	Ft.	2"	sch 40	pvc
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 34	Ft.	portland	tremie
From 34	To 37	Ft.	Bentonite	tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter		Slot Size		Material
From 40	To 45	Ft.	2"	in.	.010	in.	pvc
From	To	Ft.		in.		in.	
From	To	Ft.		in.		in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 37	To 45	Ft.	# 3	gravel
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0	4	Brown sand
4	29	Grey sandy clay
29	45	Brownish grey sandy clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10/29/08

Wesley W. Herman
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2480

1. WELL CONTRACTOR:

LEWIS LEFEVER
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) MW-42DW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/4-11/13/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 95.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 16.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 70	Ft.	6"	SCH 40	PVC
From 0	To 90	Ft.	2"	SCH 40	PVC
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 83	Ft.	PORTLAND	TREMIE
From 83	To 88	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 90	To 95	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 88	To 95	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
55.0	57.0	Green, damp, fine SAND & SILT; trace shells
72.0	74.0	Green, wet, medium dense, fine SAND & SILT
82.0	84.0	Green, wet, fine SAND & SILT
92.0	94.0	Green, wet, fine SAND & SILT; some shells

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW42-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/8/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 38	Ft.	PORTLAND	TREMIE
From 38	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, moist, loose, coarse SAND; some silt
10.0	12.0	Light brown, wet, loose, coarse SAND; some silt
30.0	32.0	White/gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW43-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 10/31/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 41	Ft.	PORTLAND	TREMIE
From 41	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, moist, loose, medium dense SAND; some silt
10.0	12.0	Brown/gray, wet, loose, medium dense SAND; some silt; trace clay
30.0	32.0	Brown/gray, wet, loose, medium dense SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2480

1. WELL CONTRACTOR:

LEWIS LEFEVER
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) MW-44DW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/2-11/17/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 95.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 16.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 70	Ft.	6"	SCH 40	PVC
From 0	To 90	Ft.	2"	SCH 40	PVC
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 83	Ft.	PORTLAND	TREMIE
From 83	To 88	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 90	To 95	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 88	To 95	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
55.0	57.0	Green, wet, fine SAND; some silt
72.0	74.0	Green, wet, fine SAND & SILT; some shells

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW44-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/2/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 38	Ft.	PORTLAND	TREMIE
From 38	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, moist, loose, coarse SAND; some silt
10.0	12.0	Brown, wet, loose, coarse SAND
30.0	32.0	Light gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2480

1. WELL CONTRACTOR:

LEWIS LEFEVER
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) MW-45DW

STATE WELL PERMIT#(if applicable) _____

DWQ or OTHER PERMIT #(if applicable) _____

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use) _____

DATE DRILLED 11/14-11/18/07

TIME COMPLETED _____ AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable) _____

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS _____

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON _____

MAILING ADDRESS _____

_____
City or Town State Zip Code

(_____)- _____
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 95.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 16.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To _____ From _____ To _____
From _____ To _____ From _____ To _____
From _____ To _____ From _____ To _____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 70	Ft.	6"	SCH 40	PVC
From 0	To 90	Ft.	2"	SCH 40	PVC
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 83	Ft.	PORTLAND	TREMIE
From 83	To 88	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 90	To 95	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 88	To 95	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
8.0	10.0	Tan, wet, fine SAND; trace silt
13.0	15.0	Tan, wet, fine SAND; trace silt
20.0	30.0	Olive green, wet CLAY; some fine sand
33.0	35.0	White, wet, fine/coarse SAND & SILT
43.0	45.0	White, wet, fine/coarse SAND; some silt & shells
58.0	60.0	Green, wet, fine SAND & SILT; some shells
72.0	74.0	Green, wet, fine SAND & SILT

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW46-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/9/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.5 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 38	Ft.	PORTLAND	TREMIE
From 38	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
10.0	12.0'	Light brown, wet, loose, coarse/medium coarse SAND; some silt
35.0	37.0	Light gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW-47

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/6/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 20	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 13	Ft.	PORTLAND	TREMIE
From 13	To 18	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 20	To 30	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18	To 30	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
NO SAMPLES TAKEN		

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW47-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/6/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 38	Ft.	PORTLAND	TREMIE
From 38	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Brown, moist, loose, coarse SAND
10.0	12.0	Brown, wet, loose, coarse SAND; some silt
30.0	32.0	White/light gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW-48

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 10/30/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 20	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 16	Ft.	PORTLAND	TREMIE
From 16	To 18	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 20	To 30	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18	To 30	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
NO SAMPLES TAKEN		

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW48-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 10/30/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 41	Ft.	PORTLAND	TREMIE
From 41	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Light brown, moist, loose, coarse SAND
10.0	12.0	Light brown, wet, loose, coarse SAND
30.0	32.0	Brown/gray, wet, loose, coarse SAND; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2480

1. WELL CONTRACTOR:

LEWIS LEFEVER
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) MW-49DW

STATE WELL PERMIT#(if applicable) _____

DWQ or OTHER PERMIT #(if applicable) _____

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use) _____

DATE DRILLED 11/1-11/5/07

TIME COMPLETED _____ AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable) _____

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS _____

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON _____

MAILING ADDRESS _____

_____
City or Town State Zip Code

(_____)-_____
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 95.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 16.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To _____ From _____ To _____
From _____ To _____ From _____ To _____
From _____ To _____ From _____ To _____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 70	Ft.	6"	SCH 40	PVC
From 0	To 90	Ft.	2"	SCH 40	PVC
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 83	Ft.	PORTLAND	TREMIE
From 83	To 88	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 90	To 95	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 88	To 95	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
10.0	12.0'	Tan, wet, fine SAND; trace silt
25.0	27.0	Dark gray, wet, fine SAND; trace silt
35.0	37.0	Tan, wet, fine/coarse SAND & SILT
72.0	74.0	Green, wet, fine SAND & SILT; some shells

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3367

1. WELL CONTRACTOR:

GARY ELLINGWORTH
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) 86-MW50-IW

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 11/1/07

TIME COMPLETED AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON

MAILING ADDRESS

City or Town State Zip Code

( )-
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To ____ From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 41	Ft.	PORTLAND	TREMIE
From 41	To 43	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
5.0	7.0'	Brown, moist, loose, coarse/medium SAND; some clay
10.0	12.0	Light brown/gray, wet, loose SILT & SAND; trace clay
30.0	32.0	Light brown/gray, wet, loose SAND & SILT; some coral

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2480

1. WELL CONTRACTOR:

LEWIS LEFEVER
Well Contractor (Individual) Name

PARRATT-WOLFF, INC.
Well Contractor Company Name

STREET ADDRESS 501 MILLSTONE DRIVE

HILLSBOROUGH, NC 27278
City or Town State Zip Code

(919)- 644-2814
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable) MW-51DW

STATE WELL PERMIT#(if applicable) _____

DWQ or OTHER PERMIT #(if applicable) _____

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use) _____

DATE DRILLED 10/30-11/16/07

TIME COMPLETED _____ AM ☐ PM ☐

3. WELL LOCATION:

CITY: JACKSONVILLE COUNTY ONSLOW

MCB CAMP LEJEUNE
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(check appropriate box)

LATITUDE 3 4 44.651'

LONGITUDE 7 7 25.039'

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☐ GPS ☒ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable) _____

NAME OF FACILITY MCB CAMP LEJEUNE

STREET ADDRESS _____

JACKSONVILLE NC 28542
City or Town State Zip Code

CONTACT PERSON _____

MAILING ADDRESS _____

_____
City or Town State Zip Code

(_____)- _____
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 95.0'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 16.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS N/A FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A **METHOD OF TEST** N/A

f. DISINFECTION: Type N/A **Amount** N/A

g. WATER ZONES (depth):

From N/A To _____ From _____ To _____
From _____ To _____ From _____ To _____
From _____ To _____ From _____ To _____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 70	Ft.	6"	SCH 40	PVC
From 0	To 90	Ft.	2"	SCH 40	PVC
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 83	Ft.	PORTLAND	TREMIE
From 83	To 88	Ft.	BENTONITE	TREMIE
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 90	To 95	Ft.	2 in.	.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 88	To 95	Ft.	#1	SAND
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
10.0	12.0	Gray, moist, soft CLAY & SILT
15.0	17.0	Gray, wet, medium dense, fine SAND & SILT
35.0	37.0	White, wet, very dense, fine/coarse SAND & GRAVEL
60.0	62.0	Olive green, moist, fine SAND & SILT
72.0	74.0	Olive green, moist, fine SAND & SILT

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986

1. WELL CONTRACTOR:

L. Martin Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW 52

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/6/2008

TIME COMPLETED 9:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 3 4 43.077

LONGITUDE 07 7 26.990

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.02" FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION: Type** Amount

g. **WATER ZONES** (depth):

From 5' To 30' From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From -.02"	To 20'	Ft.	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From -1'	To 16'	Ft.	Portland	Tremie
From 16'	To 18'	Ft.	Bentonit	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 20'	To 30'	Ft.	2" in.	.020 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18'	To 30'	Ft.	#3	Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0'	.05	Asphalt
.05	1'	Gravel
1'	5'	Brownish Black Sandy Clay
5'	30'	Gray Sandy Clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 6/9/2008

L. Martin Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3404

1. WELL CONTRACTOR:

Wesley W. Herman
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW-52 IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 10/27/08

TIME COMPLETED 11:30 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 34° 43.073
LONGITUDE 077° 26.989

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 7.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION**: **Type** Amount

g. **WATER ZONES** (depth):
From To From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	sch 40	pvc
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 40	Ft.	portland	tremie
From 40	To 43	Ft.	Bentonite	tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2" in.	.010 in.	pvc
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	# 3	gravel
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0	4	Brown sand
4	30	Grey sandy clay
30	50	Brownish grey sandy clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10/29/08

Wesley W. Herman
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986

1. WELL CONTRACTOR:

L. Martin Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW 53

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/5/2008

TIME COMPLETED 12:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 3 4 43.088

LONGITUDE 07 7 26.889

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 30'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.02" FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION: Type** Amount

g. **WATER ZONES** (depth):

From 5' To 30' From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From -.02"	To 20'	Ft.	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From -1'	To 16'	Ft.	Portland	Tremie
From 16'	To 18'	Ft.	Bentonit	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter		Slot Size		Material
From 20'	To 30'	Ft.	2"	in.	.020	in.	PVC
From	To	Ft.		in.		in.	
From	To	Ft.		in.		in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 18'	To 30'	Ft.	#3	Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0'	1.5	Concrete
1.5	2'	Gravel
2'	5'	Brownish Black Sandy Clay
5'	30'	Gray Sandy Clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 6/9/2008

L. Martin Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3404

1. WELL CONTRACTOR:

Wesley W. Herman
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW-53 IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 10/26/08

TIME COMPLETED 1:45 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 34° 43.989
LONGITUDE 077° 26.870

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 50

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 6.2 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION**: **Type** Amount

g. **WATER ZONES** (depth):
From To From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From 0	To 45	Ft.	2"	sch 40	pvc
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 40	Ft.	portland	tremie
From 40	To 43	Ft.	Bentonite	tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2" in.	.010 in.	pvc
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	# 3	gravel
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0	6	Brown sand
6	28	Grey sandy clay
28	50	Brownish grey sandy clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10/29/08

Wesley W. Herman
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986

1. WELL CONTRACTOR:

L. Martin Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen | NC | 28315
City or Town | State | Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW54IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/3/2008

TIME COMPLETED 5:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515 Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 3 4 43.075
LONGITUDE 07 7 26.835

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515 Site 86

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville | NC | 28542
City or Town | State | Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune | NC | 28542
City or Town | State | Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 45'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.02" FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION: Type** Amount

g. **WATER ZONES** (depth):

From 5'	To 45'	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From -.02"	To 40'	Ft.	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From -1'	To 36'	Ft.	Portland	Tremie
From 36'	To 38'	Ft.	Bentonit	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter		Slot Size		Material
From 40'	To 45'	Ft.	2"	in.	.020	in.	PVC
From	To	Ft.		in.		in.	
From	To	Ft.		in.		in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 38'	To 45'	Ft.	#3	Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0'	.05	Asphalt
.05	1'	Gravel
1'	4.5	Brownish Black Sandy Clay
4.5	32'	Gray Sandy Clay
32'	45'	Whitish Gray Sandy Clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 6/9/2008

L. Martin Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986

1. WELL CONTRACTOR:

L. Martin Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW55IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/4/2008

TIME COMPLETED 4:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 3 4 43.080

LONGITUDE 07 7 26.545

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 45'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.02" FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION: Type** Amount

g. **WATER ZONES** (depth):

From 5' To 45' From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From -.02"	To 40'	Ft.	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From -1'	To 36'	Ft.	Portland	Tremie
From 36'	To 38'	Ft.	Bentonit	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 40'	To 45'	Ft.	2" in.	.020 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 38'	To 45'	Ft.	#3	Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0'	.05	Asphalt
.05	1'	Gravel
1'	4	Brownish Black Sandy Clay
4	30'	Gray Sandy Clay
30'	45'	Whitish Gray Sandy Clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 6/9/2008

L. Martin Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

MW 56

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert Walker
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 4247885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) MW 56

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 8C
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS **OR** 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS **OR** 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp LeJeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
CH2M Hill
Contact Name
Theron Grim 11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 5444040 Suite 304
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4 Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25 Ft.	2"	sch40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 18' Ft.	Type I	Trimmie
Top 18	Bottom 23 Ft.	Chips	Pour
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 25'	Bottom 35 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 23	Bottom 35 Ft.	#2	
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	TAN Loose Sand
5	11	Soft SA CL
10	20	Grey Soft SA CL
20	35	Loose Wet SA

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Walker
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Walker
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

w
56 DW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 424 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# 16
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) 86 / MW 56 DW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED Dec 8 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune Blvd
Street Address
Camp Le Jeune
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmell Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 90
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Pump/Submersable
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4 Bottom 90 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 80 Ft.	2"	sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 73 Ft.	Type I Portland	Trimmie
Top 73	Bottom 78 Ft.	bent chips	Pour
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 80	Bottom 90 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 78	Bottom 90 Ft.	#2	SAND
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose SA
5	10	Soft Cl SA Moist
10	20	Grey Soft Cl SA
20	35	Loose wet SA
35	40	SA w/ Cl S
40	55	Cement Sands
55	70	Si SA w/ Limestone
70	80	Si SA w/ Shell
80	90	Grey Si SA w/ Shell

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986

1. WELL CONTRACTOR:

L. Martin Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

STREET ADDRESS 324 Fields Drive, Suite C

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

SITE WELL # (if applicable) MW 56 IW

STATE WELL PERMIT# (if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/6/2008

TIME COMPLETED 2:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Jacksonville COUNTY Newhanover

Camp LeJeune Air Station AS515
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other
(check appropriate box)

LATITUDE 3 4 43.066
LONGITUDE 07 7 26.489

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

4. FACILITY- is the name of the business where the well is located.

FACILITY ID # (if applicable) AS515

NAME OF FACILITY AirStation Camp LeJeune

STREET ADDRESS AS515

Jacksonville NC 28542
City or Town State Zip Code

CONTACT PERSON Bob Lowder

MAILING ADDRESS EMD Bld. 12 PSC Box 2004

Camp Lejeune NC 28542
City or Town State Zip Code

(910)- 415-9607
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 45'

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.02" FT. Above Land Surface
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) **METHOD OF TEST**

f. **DISINFECTION: Type** Amount

g. **WATER ZONES** (depth):

From 5'	To 45'	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From -.02"	To 40'	Ft.	2"	SCH40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From -1'	To 36'	Ft.	Portland	Tremie
From 36'	To 38'	Ft.	Bentonit	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 40'	To 45'	Ft.	2" in.	.020 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 38'	To 45'	Ft.	#3	Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG:

From	To	Formation Description
0'	1'	Gravel
1'	5	Brownish Black Sandy Clay
4	28"	Gray Sandy Clay
28'	45'	Whitish Gray Sandy Clay

11. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 6/9/2008

L. Martin Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

MW 58

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl FL 32804
City or Town State Zip Code
(407) 426 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) MW 58

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp LeJeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp LeJeune
Facility Name Facility ID# (if applicable)
LeJeune Blvd
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4 Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	sch40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18	Ft.	Type I Cement	Tremie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sands
5	10	Soft SA Cl
10	20	Grey Soft SA Cl
20	35	Loose wet SA

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

w
8 DW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Walker
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2350 Silverstar Rd
Street Address
Orlando Fl FL 32804
City or Town State Zip Code
(407) 424 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 / MW 58 DW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)
DATE DRILLED Dec 8 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☑Flat ☐Ridge ☐Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune Blvd
Street Address
Camp Le Jeune
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmell Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 90
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Pump/Submersable
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4 Bottom 90 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 80	Ft.	2"	sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 73	Ft.	Type I Portland	Tremmie
Top 73	Bottom 78	Ft.	bent chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 80	Bottom 90	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 78	Bottom 90	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose SA
5	10	Stiff Cl SA Moist
10	20	Grey Stiff Cl SA
20	35	Loose wet SA
35	40	SA w/ Cl S
40	55	Cement Sands
55	70	Si SA w/ Limestone
70	80	Si SA w/ Shell
80	90	Grey Si SA w/ Shell

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Walker
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Walker
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 58 IW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 4247885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# 16
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 / MW 58 IW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED Dec 8 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune Blvd
Street Address
Camp Le Jeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 55'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Bucket/Pump
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 55 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 45 Ft.	2	Sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 37 Ft.	Cement	Trimmie
Top 37	Bottom 42 Ft.	Bent Chips	Pour
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 45	Bottom 55 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft. in.		in.	
Top	Bottom Ft. in.		in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 42	Bottom 55 Ft.	#2	Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sand
5	10	Soft Clay Moist
10	20	Grey Soft Cl
20	35	Loose wet Sand
35	55	Sa Cl Moist

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 59

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Walker
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl FL 32804
City or Town State Zip Code
(407) 426 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) MW 59

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28224
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	Sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18'	Ft.	Type I Portland	Tremmie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Soft Sa Cl
10	20	Gray Soft Sa Cl
20	35	Loose wet Sa

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Walker
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Walker
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:

Robert R Walker
Well Contractor (Individual) Name

Groundwater Protection
Well Contractor Company Name

2300 Silverstar Rd
Street Address

Orlando Fl — Fl 32804
City or Town — State — Zip Code

(407) 426 7885
Area code — Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# Ø

OTHER ASSOCIATED PERMIT#(if applicable) Ø

SITE WELL ID #(if applicable) Site 86 MW 59 DW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED Dec 8 09

4. WELL LOCATION:

Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Camp Le Jeune COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other

LATITUDE 36 ° ' " DMS **OR** 3x.xxxxxxxxx DD

LONGITUDE 75 ° ' " DMS **OR** 7x.xxxxxxxxx DD

Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp Le Jeune
Facility Name — Facility ID# (if applicable)

Le Jeune Blvd
Street Address

Camp Lejeune
City or Town — State — Zip Code

Theron Grim
Contact Name

11301 Carmell Commons Blvd
Mailing Address

Charlotte NC 28226
City or Town — State — Zip Code

(704) 544-4040
Area code — Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 90

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Pump/Submersable

f. **DISINFECTION: Type** Ø **Amount**

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
4	90		

7. CASING:

Depth Top	Depth Bottom	Diameter Ft.	Thickness/ Weight	Material
0	80	2"	sch 40	PVC

8. GROUT:

Depth Top	Depth Bottom	Material	Method
0	73	Type I Portland	Trimmie
73	78	bent chips	Pour

9. SCREEN:

Depth Top	Depth Bottom	Diameter Ft.	Slot Size	Material
80	90	2 in.	.01 in.	PVC
		in.	in.	
		in.	in.	

10. SAND/GRAVEL PACK:

Depth Top	Depth Bottom	Size	Material
78	90	#2	SAND

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose SA
5	10	Soft Cl SA Moist
10	20	Grey Soft Cl SA
20	35	Loose wet SA
35	40	SA w/ Cl S
40	55	Cement Sands
55	70	Si SA w/ Limestone
70	80	Si SA w/ Shell
80	90	Grey Si SA w/ Shell

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Walker — DATE
SIGNATURE OF CERTIFIED WELL CONTRACTOR

Robert R Walker
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

W 59IW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:

Robert R Wilke
Well Contractor (Individual) Name

Groundwater Protection
Well Contractor Company Name

2300 Silverstar Rd
Street Address

Orlando Fl — Fl — 32804
City or Town — State — Zip Code

(407) 4247885
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# Ø

OTHER ASSOCIATED PERMIT#(if applicable) Ø

SITE WELL ID #(if applicable) Site 86 / MW 59 IW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☐ (list use)

DATE DRILLED Dec 8 09

4. WELL LOCATION:

Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Camp Le Jeune COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other

LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD

LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD

Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp Le Jeune
Facility Name — Facility ID# (if applicable)

Le Jeune Blvd
Street Address

Camp Lejeune — NC
City or Town — State — Zip Code

Theron Grim
Contact Name

11301 Carmel Commons Blvd
Mailing Address

Charlotte — NC 28226
City or Town — State — Zip Code

(704) 544-4040
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 55'

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Bucket/Pump

f. **DISINFECTION: Type** Ø **Amount** _____

g. **WATER ZONES** (depth):

Top 4'	Bottom 55	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 45 Ft.	2	Sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 37 Ft.	Cement	Trimmie
Top 37	Bottom 42 Ft.	Bent Chips	Pour
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 45	Bottom 55 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 42	Bottom 55 Ft.	#2	SAND
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sand
5	10	Soft Clay Moist
10	20	Grey Soft Cl
20	35	Loose wet Sand
35	55	Sa Cl Moist

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke — _____
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 60

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2350 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 4247885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) MW 60

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	Sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18'	Ft.	Type I Portland	Tremmie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Soft Sa Cl
10	20	Gray Soft Sa Cl
20	35	Loose Wet Sa

12. **REMARKS:**

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 60IW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:

Robert R Wilke
Well Contractor (Individual) Name

Groundwater Protection
Well Contractor Company Name

2300 Silverstar Rd
Street Address

Orlando FL FL 32804
City or Town State Zip Code

(407) 426 7885
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# Ø

OTHER ASSOCIATED PERMIT#(if applicable) Ø

SITE WELL ID #(if applicable) Site 86 MW 60IW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use) _____

DATE DRILLED Nov 24 09

4. WELL LOCATION:

Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Camp LeJeune COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

☐Slope ☐Valley ☑Flat ☐Ridge ☐Other _____

LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD

LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD

Latitude/longitude source: ☐GPS ☐Topographic map

(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp LeJeune
Facility Name Facility ID# (if applicable)

LeJeune Blvd
Street Address

Camp Lejeune NC
City or Town State Zip Code

Theron Grim
Contact Name

11301 Carmel Commons Blvd
Mailing Address

Charlotte NC 28226
City or Town State Zip Code

(704) 544-4040
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 55

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Bucket/Pump

f. **DISINFECTION: Type** Ø **Amount** _____

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
4'	55		

7. CASING:

Depth Top	Bottom	Diameter Ft.	Thickness/ Weight	Material
0	45	2	Sch 40	PVC

8. GROUT:

Depth Top	Bottom	Material Ft.	Method
0	37	Cement	Trimmie
37	42	Bent Chips	Pour

9. SCREEN:

Depth Top	Bottom	Diameter Ft. in.	Slot Size in.	Material
45	55	2	.01	PVC

10. SAND/GRAVEL PACK:

Depth Top	Bottom	Size Ft.	Material
42	55	#2	SAND

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sand
5	10	Soft Clay Moist
10	20	Grey Soft Cl
20	35	Loose wet Sand
35	55	Sa Cl Moist

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

mw 61

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:

Robert R Wilke
Well Contractor (Individual) Name

Groundwater Protection
Well Contractor Company Name

2350 Silverstar Rd
Street Address

Orlando Fl Fl 32804
City or Town State Zip Code

(407) 426 7885
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# Ø

OTHER ASSOCIATED PERMIT#(if applicable) Ø

SITE WELL ID #(if applicable) Site 86 - mw 61

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 12/18/09

4. WELL LOCATION:

Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Camp Le Jeune COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other

LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxx DD

LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxx DD

Latitude/longitude source: ☐ GPS ☐ Topographic map

(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp Le Jeune
Facility Name Facility ID# (if applicable)

Le Jeune
Street Address

Camp Lejeune NC
City or Town State Zip Code

Theron Grim
Contact Name

11301 Carmel Commons Blvd
Mailing Address

Charlotte NC 28224
City or Town State Zip Code

(704) 544-4040
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 35'

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket

f. **DISINFECTION: Type** Ø **Amount**

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
4'	35		

7. CASING:

Depth Top	Depth Bottom	Ft.	Diameter	Thickness/ Weight	Material
0	25		2"	Sch 40	PVC

8. GROUT:

Depth Top	Depth Bottom	Ft.	Material	Method
0	18'		Type I Portland	Tremmie
18	23		bent Chips	Pour

9. SCREEN:

Depth Top	Depth Bottom	Ft.	Diameter in.	Slot Size in.	Material
25	35		2	.01	PVC

10. SAND/GRAVEL PACK:

Depth Top	Depth Bottom	Ft.	Size	Material
23	35		#2	SAND

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Soft Sa Cl
10	20	Gray Soft Sa Cl
20	35	Loose Wet Sa

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

nw 61 DW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2350 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 424 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# 16
OTHER ASSOCIATED PERMIT#(if applicable) 0
SITE WELL ID #(if applicable) 86 - MW 61 DW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED Dec 8th 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune Blvd
Street Address
Camp Lejeune
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 90
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Pump/Submersible
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 90' Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 80	Ft.	2"	sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 73	Ft.	Type I Portland	Trimmie
Top 73	Bottom 78	Ft.	bent chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 80	Bottom 90	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 78	Bottom 90	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose SA
5	10	Stiff Cl SA Moist
10	20	Grey Soft Cl SA
20	35	Loose wet SA
35	40	SA w/ Cl S
40	55	Cement Sands
55	70	Si SA w/ Limestone
70	80	Si SA w/ Shell
80	90	Grey Si SA w/ Shell

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

w
/IW

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 4247885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 MW 61 IW

3. WELL USE (Check One Box) Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED Dec 8 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp LeJeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp LeJeune
Facility Name Facility ID# (if applicable)
LeJeune Blvd
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 55'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Bucket/Pump
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 55 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING: Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 45 Ft.	2	Sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT: Depth		Material	Method
Top 0	Bottom 37 Ft.	Cement	Trimmie
Top 37	Bottom 42 Ft.	Bent Chips	Pour
Top	Bottom Ft.		

9. SCREEN: Depth		Diameter	Slot Size	Material
Top 45	Bottom 55 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK: Depth		Size	Material
Top 42	Bottom 55 Ft.	#2	SAND
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sand
5	10	Soft Clay Mois L
10	20	Grey Soft Cl
20	35	Loose wet Sand
35	55	Sa Cl Moist

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 62

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2350 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 426 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 MW 62

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	Sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18'	Ft.	Type I Portland	Tremmie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Soft Sn Cl
10	20	Gray Soft Sn Cl
20	35	Loose Wet Sn

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl Fl 32804
City or Town State Zip Code
(407) 4247885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 MW63

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	Sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18'	Ft.	Type I Portland	Tremmie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Silt Sand
10	20	Grey Silt Sand
20	35	Loose Wet Sand

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

mw 63 I w

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:

Robert R Walker
Well Contractor (Individual) Name

Groundwater Protection
Well Contractor Company Name

2300 Silverstar Rd
Street Address

Orlando Fl FL 32804
City or Town State Zip Code

(407) 426 7885
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# 16

OTHER ASSOCIATED PERMIT#(if applicable) Ø

SITE WELL ID #(if applicable) Site 86 MW 63 IW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 12/8/09

4. WELL LOCATION:

Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Camp Le Jeune COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

☐Slope ☐Valley ☑Flat ☐Ridge ☐Other

LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD

LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD

Latitude/longitude source: ☐GPS ☐Topographic map

(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp Le Jeune
Facility Name Facility ID# (if applicable)

Le Jeune Blvd
Street Address

Camp Lejeune NC
City or Town State Zip Code

Theron Grim
Contact Name

11301 Carmel Commons Blvd
Mailing Address

Charlotte NC 28226
City or Town State Zip Code

(704) 544-4040
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 55

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Bucket/Pump

f. **DISINFECTION: Type** Ø **Amount**

g. **WATER ZONES** (depth):

Top 4'	Bottom 55	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 45 Ft.	2	Sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 37 Ft.	Cement	Trimmie
Top 37	Bottom 42 Ft.	Bent Chips	Pour
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 45	Bottom 55 Ft.	2 in.	.01 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 42	Bottom 55 Ft.	#2	SAND
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose Sand
5	10	Soft Clay Moist
10	20	Grey Soft Cl
20	35	Loose wet Sand
35	55	Sa Cl Moist

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Walker
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Walker
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

MW 64

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl FL 32804
City or Town State Zip Code
(407) 426 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 MW 64

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)
DATE DRILLED 12/18/09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslow
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other
LATITUDE 36 ° ' " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ' " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp LeJeune
Facility Name Facility ID# (if applicable)
Le Jeune
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28224
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 35'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 4' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1 **METHOD OF TEST** Bucket
f. **DISINFECTION: Type** Ø **Amount**
g. **WATER ZONES** (depth):
Top 4' Bottom 35 Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 25	Ft.	2"	Sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 18'	Ft.	Type I Portland	Tremmie
Top 18	Bottom 23	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 25	Bottom 35	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 23	Bottom 35	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Loose Tan Sands
5	10	Soft Sa Cl
10	20	Grey Soft Sa Cl
20	35	Loose Wet Sa

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3011-A

1. WELL CONTRACTOR:

Ricky Davis
Well Contractor (Individual) Name

SMD Services
Well Contractor Company Name

156-B Import Circle
Street Address

Huntsville AL 35806
City or Town State Zip Code

(256) 852-7000
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT#

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) MW 65 Site 86

3. WELL USE (Check One Box) Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 3-18-2010

4. WELL LOCATION:

Camp Lejeune / Air Station
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Jacksonville COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other

LATITUDE 34 ° 43' 05 " DMS **OR** DD

LONGITUDE 77 ° 26' 06 " DMS **OR** DD

Latitude/longitude source: ☒GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

Camp Lejeune Site 86
Facility Name Facility ID# (if applicable)

Street Address

City or Town State Zip Code

Bob Lowder
Contact Name

Bldg 12 Post Lane (Room 232)
Mailing Address

Camp Lejeune NC 28542
City or Town State Zip Code

(910) 450-9607
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 20'

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** **METHOD OF TEST**

f. **DISINFECTION: Type** **Amount**

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 10 Ft.	2"	Sch 40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 5 Ft.	Cement	Gravity
Top	Bottom Ft.		
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 10	Bottom 20 Ft.	2 in.	.010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 8	Bottom 20 Ft.	#2	Sand
Top 5	Bottom 8 Ft.	3/8	Bentonite
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	7	Top Soil - loose w/ some sand
7	11	Moist Clay
11	13	Clay w/ some sand
13	20	Sand w/ little clay

12. REMARKS: Complete with Flushmount cover & concrete pad
Well # MW 65

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Ricky Davis
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2973

1. WELL CONTRACTOR:

Kevin White
Well Contractor (Individual) Name

Parratt-Wolff, Inc.
Well Contractor Company Name

501 Millstone Drive
Street Address

Hillsborough NC 27278
City or Town State Zip Code

(919) 644-2814
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT#

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) IR86-MW66IW

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 6/1-6/2/10

4. WELL LOCATION:

Curtis Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Jacksonville COUNTY Onslow

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other

LATITUDE 34 ° 43 ' 247.0000 " DMS **OR** 3x.xxxxxxxxx DD

LONGITUDE 77 ° 26 ' 183.0000 " DMS **OR** 7x.xxxxxxxxx DD

Latitude/longitude source: ☑ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

MCB Camp Lejeune
Facility Name Facility ID# (if applicable)

Curtis Road
Street Address

Jacksonville NC 28542
City or Town State Zip Code

Contact Name

Mailing Address

City or Town State Zip Code

( )
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 55.0'

b. **DOES WELL REPLACE EXISTING WELL?** YES ☑ NO ☐

c. **WATER LEVEL** Below Top of Casing: 10.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top N/A	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 45.0 Ft.	2"	Sch40	PVC
Top	Bottom Ft.			
Top	Bottom Ft.			

8. GROUT:

Depth		Material	Method
Top 0	Bottom 39.0 Ft.	Portland	Tremie
Top 39.0	Bottom 42.0 Ft.	Bentonite	Tremie
Top	Bottom Ft.		

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 45.0	Bottom 55.0 Ft.	2 in.	.010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 42.0	Bottom 55.0 Ft.	#1	Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
5.0	7.0'	Brown, moist SILT & CLAY
10.0	12.0	Brown, wet, fine/medium SAND & SILT

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[signature] 6-26-10
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Kevin White
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3551 A

1. WELL CONTRACTOR:
Robert R Wilke
Well Contractor (Individual) Name
Groundwater Protection
Well Contractor Company Name
2300 Silverstar Rd
Street Address
Orlando Fl FL 32804
City or Town State Zip Code
(407) 426 7885
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT# Ø
OTHER ASSOCIATED PERMIT#(if applicable) Ø
SITE WELL ID #(if applicable) Site 86 / mwPTW-1

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use) _____
DATE DRILLED NOV 23 09

4. WELL LOCATION:
Site 86
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Camp Le Jeune COUNTY Onslo
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐ Slope ☐ Valley ☑ Flat ☐ Ridge ☐ Other _____
LATITUDE 36 ° ___ ' ___ " DMS OR 3x.xxxxxxxxx DD
LONGITUDE 75 ° ___ ' ___ " DMS OR 7x.xxxxxxxxx DD
Latitude/longitude source: ☐ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
Camp Le Jeune
Facility Name Facility ID# (if applicable)
Le Jeune Blve
Street Address
Camp Lejeune NC
City or Town State Zip Code
Theron Grim
Contact Name
11301 Carmel Commons Blvd
Mailing Address
Charlotte NC 28226
City or Town State Zip Code
(704) 544-4040
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 60'
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑
c. **WATER LEVEL** Below Top of Casing: 7' FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** 1.5 **METHOD OF TEST** Pump
f. **DISINFECTION: Type** Ø **Amount** _____
g. **WATER ZONES** (depth):
Top 7' Bottom 60' Top ___ Bottom ___
Top ___ Bottom ___ Top ___ Bottom ___
Top ___ Bottom ___ Top ___ Bottom ___

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom 50	Ft.	2"	sch 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0	Bottom 44	Ft.	Type I Portland	Tremie
Top 44	Bottom 48	Ft.	bent Chips	Pour
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 50	Bottom 60	Ft.	2 in.	.01 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 48	Bottom 60	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5	Tan Loose SA
5	10	Soft SA Cl
10	20	wet Grey SA Cl
20	35	SA Cl wet
35	60	Cl w/ SA @ 60
@	60	Cemented Sa

12. **REMARKS:**

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Robert R Wilke
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Robert R Wilke
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

Appendix C
Groundwater Sampling Sheets and Monitoring Well Purge Forms

8.55

.53

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW03
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW03-09D
Date:	12/14/09	Sampling Team:	K. Ramsey / ICLT
Weather:	65°, Sunny		

Total Depth:	16.29	FT.(BTOC)	Water Quality Meter:	YSI #556
Depth to water:	(-) 5.56	FT.(BTOC)	Depth to Water / Date and Time:	5.56 12/14/09 1325
Water Column:	10.73	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	1.74	GAL. x3 = 5.22		
Total Purge Vol.:	~10	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~10	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/14/09 Time: 1445	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see pg 2			—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1335	<1/2	19.30	0.064	2.42	5.07	186.7	47.4	6.42	Cloudy / Brown
1340	~3/4	19.15	0.064	1.51	4.85	199.0	93.2	6.56	Cloudy / Brown
1345	~1 1/2	19.08	0.066	0.96	4.74	204.4	55.6	6.74	Cloudy
1350	<2 1/4	19.17	0.066	0.58	4.57	207.1	31.4	6.81	Clear
1355	~2 3/4	19.17	0.067	0.50	4.66	206.3	24.8	6.84	Clear
1400	<3 1/4	19.11	0.067	0.46	4.65	205.0	21.8	6.79	Clear
1405	<4	19.09	0.065	0.40	4.63	202.2	17.5	6.85	Clear
1410	~4 1/4	19.06	0.064	0.39	4.63	200.9	16.4	6.91	Clear
1415	~4 3/4	19.03	0.065	0.46	4.63	200.8	16.5	6.81	Clear
1420	>5 1/2	19.04	0.068	0.43	4.63	197.7	15.0	6.91	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1331 Purge Rate: (see below)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 0 mg/L

Purge rate increased at 1334 b/c <0.25 L/min, new rate ~0.3 L/min switched to 3 well vol. method >5% drawdown, flow rate increased to ~0.4 L/min. (@ 1343)

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW03
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW03-09D
Date:	12/14/09	Sampling Team:	K. Ramsey / CLT
Weather:	65°, Sunny		

Total Depth:	16.29	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 5.56	FT.(BTOC)	Depth to Water / Date and Time:	5.56 12/14/09 1325
Water Column:	10.73	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	1.74	GAL.		
Total Purge Vol.:	~10 ~~24~~	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~10	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/14/09 Time: 1445	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.79	0.065	0.31	4.60	186.8	12.4	6.84	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1425	~6¼	18.99	0.067	0.39	4.62	194.6	13.6	6.79	Clear
1430	>7	18.92	0.066	0.35	4.32	190.2	13.7	6.80	Clear
1435	<7½	18.90	0.064	0.35	4.61	187.4	13.3	6.81	Clear
1440	<8	18.87	0.065	0.33	4.62	187.9	11.8	6.81	Clear
1445	~8½	18.79	0.065	0.31	4.60	186.8	12.4	6.84	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1331 Purge Rate: (see pg 1)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 0 mg/L

see notes on pg 1

MS/MSD Duplicate ID No.:

Signature(s): Kelly A. Ramsey

(30.72)

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86 - MW09
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW09-09D
Date:	12/11/09	Sampling Team:	K. Ramsey
Weather:	38°, P. Cloudy		

Total Depth: 16.9 FT.(BTOC) *
Depth to water: (-) 5.91 FT.(BTOC)
Water Column: 10.99 FT.
(x) 0.163 GAL/FT.
Well Volume: 1.79 GAL. x3 = 5.37
Total Purge Vol.: ~12 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~10 FT.(BTOC)

Water Quality Meter: YSI 556 #06309
Depth to Water / Date and Time: 5.91 12/11/09 1430

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

4

Page 1 of 2

SAMPLE DATA

Date: 12/11/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow				see pg 2				

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1435	< 1/2	16.88	0.098	1.76	5.87	43.8	6.97	7.20	Cloudy
1440	~3/4	17.42	0.098	1.26	5.83	39.7	85.6	7.21	Cloudy
1445	>1	17.72	0.098	1.00	5.81	35.8	67.7	7.2	Cloudy
1450	>1 1/2	17.93	0.098	0.78	5.80	33.5	63.3	7.11	Cloudy
1455	~2	18.28	0.099	0.81	5.78	33.0	59.4	7.42	Cloudy
1500	>2 1/2	18.56	0.100	0.57	5.78	30.4	64.2	7.40	Cloudy
1505	>3 1/4	18.66	0.100	0.46	5.77	28.0	66.3	7.40	Cloudy
1515	~4 1/2	18.75	0.100	0.36	5.76	13.9	47.5	7.31	Cloudy
1530	~5 1/2	18.34	0.100	0.38	5.74	-2.8	29.9	7.26	Clear
1535	>6	18.68	0.101	0.28	5.73	-8.0	25.0	7.39	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ~1430 Purge Rate: ~0.3 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 0 mg/L

*Tagged bottom to ensure correct well
>5% drawdown ∴ 3 well vol. method
1452 turned pumping rate up to ~0.5 L/min

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

1520 battery dies - compressor working sporadically
1525 - new battery attached - pump re-started

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	1R86-MW09
Event:	Comprehensive Groundwater Sampling	Sample ID:	1R86-GW09-09D
Date:	12/11/09	Sampling Team:	K. Ramsey
Weather:	38°, P. Cloudy		

Total Depth:	16.9	FT.(BTOC)	Water Quality Meter:	YSI 556 # 06309
Depth to water:	(-) 5.91	FT.(BTOC)	Depth to Water / Date and Time:	5.91 12/11/09 1430
Water Column:	10.99	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	1.79	GAL.		
Total Purge Vol.:	~12	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~10	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/11/09 Time: 1555 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	18.78	0.104	0.24	5.72	-29.4	17.5	7.31	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1540	>6 1/2	18.76	0.102	0.26	5.73	-12.7	23.5	7.28	Clear
1545	>7	18.72	0.102	0.25	5.72	-20.9	21.4	7.25	Clear
1550	>7 1/2	18.74	0.103	0.23	5.72	-24.7	17.5	7.33	Clear
1555	>8	18.78	0.104	0.24	5.72	-29.4	17.5	7.31	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ~1430 Purge Rate: ~0.3 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 0 mg/L

see pg 1 for notes

Nitrate = 0 x 4.4 = 0 mg/L

Nitrite = 0 x 3.3 = 0 mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather: 50° Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW10IW
Sample ID: IR86-MW10IW-09D
Sampling Team: Dan Zu

Total Depth: 31.05 FT.(BTOC)
Depth to water: (-) 5.95 FT.(BTOC)
Water Column: 25.1 FT.
(x) .163 GAL/FT.
Well Volume: 4.09 GAL.
Total Purge Vol.: 5.3 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 25' FT.(BTOC)

Water Quality Meter: YSI 556 S/N 04180
Depth to Water / Date and Time: 5.95 12/14/09 0820

5% drawdown = 1.26 ft

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

page 1 of 2

SAMPLE DATA

Date: 12/14/09 Time: 0930	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: low Flow	19.4	.439	.27	4.84	-22.4	6.9	6.23	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	±3%	±10%	±0.1	±10 mv	<10		
0830	0.4	18.9	.485	1.34	5.01	55.8	295	6.05	Cloudy, grey
0835	0.8	18.8	.410	1.16	4.79	31.2	199	6.17	
0840	1.2	18.7	.421	1.05	4.81	21.7	165	6.19	
0845	1.6	18.9	.429	.98	4.83	17.3	121	6.22	
0850	2.0	18.9	.438	.65	4.83	12.5	79	6.23	
0855	2.5	19.1	.435	.43	4.84	5.2	64	6.23	
0900	2.9	19.3	.430	.38	4.85	-5.9	50	6.23	
0905	3.3	19.3	.431	.36	4.85	-18.1	35	6.23	
0910	3.7	19.3	.433	.32	4.84	-20.1	21	6.23	
0915	4.1	19.4	.438	.28	4.84	-21.2	12	6.23	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0825 Purge Rate: 0.3 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe: 2.7 mg/L

MS/MSD Duplicate ID No.:

Signature(s): Dan Zu

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: IR86-MW10IW
Sample ID: IR86-GW10IW-09D
Sampling Team: D. Brown/CLT

Total Depth: ____ FT.(BTOC)
Depth to water: (-) ____ FT.(BTOC)
Water Column: ____ FT.
(x) ____ GAL/FT.
Well Volume: ____ GAL.
Total Purge Vol.: ____ GAL.
Purge Device: Sheetfl
Pump Inlet Depth ____ FT.(BTOC)

Water Quality Meter: ____
Depth to Water / Date and Time: ____

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0920	4.5	19.4	.437	.28	4.84	-21.7	11	6.23	
0925	4.9	19.4	.439	.27	4.84	-22.3	8.3	6.23	
0930	5.3	19.4	.439	.27	4.84	-22.4	6.9	6.23	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ____ Purge Rate: ____

Nitrate ____ mg/L
Nitrite ____ mg/L

MS/MSD | Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 10/14/09
Weather: 50°, overcast

Project Number: 389017.FI.FS.86
Well ID: 1286 - MW151W
Sample ID: 1286 - GW151W - 09D
Sampling Team: K. Tymrak / NWO

Total Depth: 54.52 FT.(BTOC)
Depth to water: (-) 4.9 FT.(BTOC)
Water Column: 49.62 FT.
(x) 0.163 GAL/FT.
Well Volume: 8.08 GAL.
Total Purge Vol.: 9.00 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 51 FT.(BTOC)

Water Quality Meter: YSI #14818, Hanna #08988
Depth to Water / Date and Time: 4.9' btoc 10/14/09 0825

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 10/14/09 Time: 1000	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	21.08	0.681	0.27	7.94	96.0	9.8	5.15	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0845	0.75	21.16	0.776	0.72	7.72	-102.5	750	light brown
0850	1.15	21.12	0.762	0.52	7.71	-102.5	700	cloudy
0855	1.55	21.14	0.754	0.40	7.68	-102.2	400	cloudy
0900	1.95	21.14	0.733	0.33	7.71	-101.5	400	clear
0905	2.35	21.10	0.717	0.30	7.72	-100.7	270	"
0910	3.15	21.10	0.700	0.26	7.79	-95.5	140	"
0925	4.45	21.11	0.694	0.28	7.79	-96.8	75.0	"
0930	5.10	21.14	0.693	0.19	7.83	-96.9	55.0	"
0935	5.75	21.09	0.690	0.25	7.85	-96.6	40.0	"
0940	6.40	21.04	0.685	0.28	7.90	-96.2	28.0	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ~~2~~
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe^{2+} 2.8 mg/L

Purge Start Time: 0835

Purge Rate: 0.3 L/min
0.5 L/min @ 0915

MS/MSD 1286 - GW151W-09D-MS/SD Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 10/14/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW151W
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: _____ FT.(BTOC)
Depth to water: (-) _____ FT.(BTOC)
Water Column: _____ FT.
(x) _____ GAL/FT.
Well Volume: _____ GAL.
Total Purge Vol.: _____ GAL.

See page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth _____ FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0945	7.05	21.07	0.685	0.30	7.88	-96.0	20.0	5.15	clear
0950	7.70	21.07	0.681	0.29	7.91	-96.1	15.0	5.15	"
0955	8.35	21.09	0.680	0.28	7.95	-96.5	11.0	5.15	"
1000	9.00	21.08	0.681	0.27	7.94	-96.0	9.8	5.15	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ~~2~~
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: _____ Purge Rate: 0.5 L/min

Nitrate_____ mg/L
Nitrite _____ mg/L
Fe

MS/MSD | Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	SITE 86	Well ID:	JR86-MW05DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	JR86-GW05DW-10A
Date:	1/14/10	Sampling Team:	DB/MS
Weather:	CLOUDY 50's		

Total Depth:	95	FT.(BTOC)	Water Quality Meter:	YSI 11841 HANNA/10817
Depth to water:	(-)	FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:	12	FT.		
	(x) .163	GAL/FT.		
Well Volume:	1.956	GAL. x 1		
Total Purge Vol.:	1.956	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	10	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/14/10 Time: 1750	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	20.11	0.527	0.18	7.51	-150.1	9.8	4.85	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1710	.2	18.41	0.257	2.19	7.81	-26.2	42.5	4.85	
1720	.9	20.22	0.512	0.99	7.52	-55.2	7.55	4.85	
1725	1.4	20.23	0.470	0.29	7.52	-135.5	9.23	4.85	
1730	1.8	20.18	0.493	0.24	7.52	-143.4	14.4	4.85	
1735	2.3	20.18	0.509	0.22	7.52	-146.4	15.2	4.85	
1740	2.7	20.15	0.520	0.19	7.52	-148.1	15.5	4.85	
1745	3.2	20.22	0.524	0.18	7.52	-149.1	12.3	4.85	
1750	3.6	20.21	0.527	0.18	7.51	-150.1	9.8	4.85	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1705 Purge Rate: 250 ml/min

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe2+ 0.2 mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

Page 1 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather: 60°, overcast

Project Number: 389017.FI.FS.86
Well ID: 1886-MW161W
Sample ID: 1886-GW161W-09D
Sampling Team: K. Tymrak/NWO

Total Depth: 55.34 FT.(BTOC)
Depth to water: (-) 5.40 FT.(BTOC)
Water Column: 49.94 FT.
(x) 0.163 GAL/FT.
Well Volume: 8.14 GAL.
Total Purge Vol.: 13.60 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 52 FT.(BTOC)

Water Quality Meter: YSI # 14218, Hanna # 08988
Depth to Water / Date and Time: 12/15/09 @ 1400

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/15/09 Time: 1555	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	17.79	0.545	0.12	7.07	-114.1	260	5.65	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1420	1.25	19.86	0.687	0.45	7.05	-99.2	80.0	5.65	clear
1425	1.90	19.85	0.675	0.37	7.02	-101.5	160	5.65	"
1430	2.55	19.84	0.654	0.34	7.02	-104.0	170	5.65	"
1435	3.20	19.84	0.628	0.31	7.03	-106.1	170	5.65	"
1440	3.85	19.85	0.608	0.27	7.04	-107.5	180	5.65	"
1445	4.50	19.84	0.591	0.24	7.05	-108.8	180	5.65	"
1450	5.15	19.83	0.578	0.22	7.06	-110.4	190	5.65	"
1455	5.80	19.82	0.573	0.21	7.06	-111.2	180	5.65	"
1505	7.10	19.82	0.564	0.19	7.06	-112.4	200	5.65	"
1515	8.40	19.83	0.561	0.16	7.06	-113.2	190	5.65	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ~~2~~
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: 1410 Purge Rate: 0.5 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 20 mg/L

MS/MSD —
Duplicate ID No.: —

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 17886-MW16W
Sample ID:
Sampling Team: K Tymrak / NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1520	9.05	19.82	0.557	0.15	7.06	-113.8	200	5.65	clear
1525	9.70	19.80	0.554	0.16	7.07	-114.0	200	5.65	"
1530	10.35	19.80	.550	0.14	7.07	-114.5	240	5.65	"
1535	11.00	19.79	.549	0.14	7.08	-114.6	240	5.65	|
1540	11.65	19.78	.548	0.13	7.07	-114.5	240	5.65	|
1545	12.30	19.78	.546	0.13	7.07	-114.6	240	5.65	|
1550	12.95	19.78	0.546	0.13	7.06	-114.0	240	5.65	|
1555	13.60	17.79	0.545	0.12	7.07	-114.1	260	5.65	|

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ~~2~~
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: Purge Rate: 0.5 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather: 60°, overcast

Project Number: 389017.FI.FS.86
Well ID: 1286-MW16DW
Sample ID: 1286-GW16DW-09D
Sampling Team: K. Tymrak / NWD

Total Depth: 94.21 FT.(BTOC)
Depth to water: (-) 4.82 FT.(BTOC)
Water Column: 89.39 FT.
(x) 0.163 GAL/FT.
Well Volume: 14.57 GAL.
Total Purge Vol.: 14.7 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth: 90 FT.(BTOC)

Water Quality Meter: YSI # 14218, Hanna # 08988
Depth to Water / Date and Time: 12/15/09 @ 1005

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/15/09 Time: 1250	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	19.77	0.658	0.17	7.62	-113.6	5.00	7.60	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1020	1.85	19.67	0.647	0.62	7.78	17.2	37.0	7.20	clear
1030	2.1	19.69	0.651	0.48	7.74	-83.3	19.0	7.50	clear
1040	3.0	19.87	0.667	0.37	7.70	-104.1	14.0	7.55	"
1050	3.9	19.80	0.669	0.32	7.68	-108.7	11.0	7.60	"
1100	4.8	19.82	0.667	0.24	7.68	-111.1	9.50	7.60	"
1110	5.7	19.82	0.665	0.25	7.67	-111.5	8.30	7.60	"
1120	6.6	19.83	0.664	0.28	7.68	-111.8	7.20	7.60	"
1130	7.5	19.79	0.663	0.31	7.66	-112.7	6.40	7.60	"
1140	8.4	19.76	0.661	0.23	7.65	-112.6	6.20	7.60	"
1150	9.3	19.75	0.660	0.21	7.64	-112.9	5.90	7.60	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ~~2~~
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 0.2 mg/L

Purge Start Time: 1005

Purge Rate: 0.34 L/min
max rate for deep well

MS/MSD —
Duplicate ID No.: —
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 12886 - Mallville DW
Sample ID:
Sampling Team: K. Tymrak / NUSO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See Page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1200	10.2	19.74	0.659	0.19	7.64	-113.2	5.30	7.60	clear
1210	11.1	19.75	0.659	0.17	7.63	-113.6	4.80	7.60	"
1220	12.0	19.76	0.658	0.17	7.63	-113.2	4.90	7.60	"
1230	12.9	19.76	0.658	0.17	7.63	-113.5	5.10	7.60	"
1240	13.8	19.78	0.658	0.18	7.62	-113.6	5.10	7.60	"
1250	14.7	19.77	0.658	0.17	7.62	-113.6	5.00	7.60	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes:
Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

Purge Start Time:

Purge Rate: 0.34 L/min

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/11/05
Weather: 40°, partly sunny

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW17HW
Sample ID: IR86 - GW17HW-09D
Sampling Team: K. Tymrak / NWO

Total Depth: 55 FT.(BTOC)
Depth to water: (-) 4.55 FT.(BTOC)
Water Column: 50.45 FT.
(x) 0.163 GAL/FT.
Well Volume: 8.22 GAL.
Total Purge Vol.: 13.4 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 50 FT.(BTOC)

Water Quality Meter: YSI #14218, Hanna #08988
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/11/09 Time: 1215	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	19.28	0.984	0.57	7.76	-105.8	>1000	4.72	cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1000	0.75	~~[illegible]~~	1.009	0.89	7.41	-92.5	27.0	4.63	clear
1005	1.1	19.80	1.024	0.55	7.88	-96.1	28.0	4.63	clear
1010	1.5	19.73	1.022	0.42	7.84	-95.8	30.0	4.64	"
1015	2.0	19.76	1.020	0.38	7.82	-94.6	25.0	4.64	"
1020	2.4	19.74	1.019	0.31	7.81	-95.1	22.0	4.65	"
1025	3.0	19.77	1.020	0.28	7.79	-95.7	19.0	4.65	"
1030	3.5	19.92	1.024	0.21	7.78	-97.4	15.0	4.70	"
1035	4.1	19.93	1.026	0.18	7.78	-97.2	15.0	4.70	"
1040	4.7	19.93	1.026	0.18	7.77	-97.4	16.0	4.74	"
1045	5.3	19.96	1.035	0.17	7.75	-96.8	19.0	4.75	"

* see page 3 for notes about sample

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0950 Purge Rate: 0.3 L/min
0.5 L/min @ 1030
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.8 mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 186 - MW17IW
Sample ID:
Sampling Team: K. Tymczak / NWSO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1050	6.0	19.95	1.041	0.18	7.74	-96.4	22.0	4.75	clear
1055	6.6	19.94	1.044	0.18	7.74	-96.7	25.0	4.77	clear
~~1100~~ 1100	7.1	19.95	1.060	0.16	7.72	-96.0	35.0	4.78	"
1105	7.6	19.96	1.062	0.16	7.70	-98.1	40.0	4.80	"
1110	8.0	19.96	1.043	0.09	7.69	-100.2	OR*	4.80	gray
1115	8.4	19.70	1.121	0.12	7.67	-93.8	~~[illegible]~~	4.80	gray NTU=OR*
1120	8.8	19.68	1.120	0.11	7.67	-94.4	~~[illegible]~~	4.80	gray NTU=OR*
1125	9.2	19.71	1.121	0.11	7.66	-94.0	OR*	4.80	gray
1130	9.6	19.71	1.123	0.11	7.66	-94.7	OR*	4.80	gray
1135	10.0	19.77	1.123	0.11	7.66	-96.0	OR*		gray

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate: returned to 0.3 L/min @ 1110 b/c water suddenly became silty & turbid

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

OR* = out of range

MS/MSD ✓ Duplicate ID No.: ✓

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1R86 - MW 17IW
Sample ID:
Sampling Team: K. Tymrak/NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1140	10.4	19.99	1.120	0.10	7.65	-97.7	OR*	4.80	cloudy
1145	10.8	19.73	1.120	0.08	7.65	-97.0	OR*	4.81	cloudy
1150	11.2	18.81	0.952	0.61	7.72	-94.2	OR*	4.80	cloudy
1155	11.6	18.99	0.967	0.48	7.73	-95.4	OR*	4.78	"
1200	12.0	19.35	1.047	0.33	7.69	-99.1	OR*	4.71	"
1205	12.4	19.35	1.043	0.23	7.71	-101.6	OR*	4.71	"
1210	13.0	19.06	0.988	0.13	7.74	-110.3	OR*	4.70	"
1215	13.4	19.28	0.984	0.17	7.76	-105.8	OR*	4.72	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate: 0.3 L/min

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

1150 - pulled up pump to 46' btoc to hopefully reduce turbidity
→ discussed situation w/ D. Brown and the decision was made to sample b/c purge time was over 2 hours

OR* = out of range

MS/MSD —
Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/11/09
Weather: 35°, light breeze

Project Number: 389017.FI.FS.86
Well ID: 1886 - MW17DW
Sample ID: 1886 - GW17DW - 091D
Sampling Team: K. Tymrak / NWO

Total Depth: 106 FT.(BTOC)
Depth to water: (-) 4.82 FT.(BTOC)
Water Column: 101.18 FT.
(x) ~~1.20~~ 0.163 GAL/FT.
Well Volume: 16.49 GAL.
Total Purge Vol.: 16.8 GAL.

Water Quality Meter: YSI #14218, Hanna #08988
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Purge Device: Bladder Pump
Pump Inlet Depth: ~~94.7~~ 95.5 FT.(BTOC)
- pump stuck in well w/ water level meter -

SAMPLE DATA

Date: 12/11/09 Time: 1635	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	19.44	1.279	0.13	8.77	-113.3	2.70	5.80	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1315	0.6	19.81	1.083	0.90	9.30	-148.8	36.0	5.62	clear
1320	1.0	19.42	1.139	0.50	9.32	-154.3	89.0	5.65	clear
1325	1.4	19.46	1.189	0.32	9.18	-155.6	20.0	5.67	"
1330	1.8	19.53	1.191	0.32	9.15	-157.5	18.0	5.65	"
1335	2.2	19.51	1.194	0.26	9.12	-156.5	16.0	5.72	"
1345	3.0	19.47	1.255	0.23	8.88	-127.5	10.0	5.71	"
1350	3.4	19.48	1.263	0.21	8.84	-124.1	7.90	5.75	"
1355	3.8	19.53	1.270	0.21	8.81	-120.6	7.10	5.75	"
1400	4.2	19.53	1.270	0.20	8.79	-119.3	6.70	5.80	"
1405	4.6	19.52	1.274		8.76	-117.7		5.80	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 0 mg/L

Purge Start Time: 1305
Purge Rate: 0.32 L/min
- pump will not pump faster at this depth

MS/MSD —
Duplicate ID No.: —
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW17DW
Sample ID:
Sampling Team: K. Tymrak / NWS

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See Page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1410	5.0	19.59	1.277	0.32	8.77	-117.1	5.60	5.80	clear
1415	5.4	19.42	1.274	0.24	8.76	-116.3	5.40	5.80	"
1420	5.8	19.33	1.271	0.22	8.74	-115.4	5.10	5.80	"
1425	6.2	19.43	1.276	0.19	8.75	-115.4	4.80	5.80	"
1430	6.6	19.36	1.276	0.21	8.75	-114.6	4.60	5.80	"
1435	7.0	19.30	1.272	0.18	8.74	-114.4	4.30	5.80	"
1440	7.4	19.48	1.270	0.18	8.74	-114.3	4.30	5.80	"
1445	7.8	19.36	1.275	0.17	8.74	-114.0	4.20	5.80	"
1450	8.2	19.36	1.276	0.18	8.74	-113.8	4.20	5.80	"
1455	8.6	19.45	1.278	0.17	8.73	-113.8	4.00	5.80	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate: 0.3 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	17286- MW 17DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	
Date:	12/11/09	Sampling Team:	K. Tymrak / NWO
Weather:			

Total Depth: _____ FT.(BTOC)
Depth to water: (-) _____ FT.(BTOC)
Water Column: _____ FT.
(x) _____ GAL/FT.
Well Volume: _____ GAL.
Total Purge Vol.: _____ GAL.

See page 1

Water Quality Meter: _____
Depth to Water / Date and Time: _____

Purge Device: _____

Pump Inlet Depth _____ FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1500	9.0	19.40	~~1.431~~ 1.276	~~1.096~~ 0.37	~~0.176~~ 8.70	-113.7	3.80	5.80	Clear
1505	9.4	19.43	1.276	0.37	8.71	-113.1	3.60	5.75	"
1510	9.8	19.40	1.278	0.35	8.72	-113.5	3.50	5.75	"
1515	10.2	19.41	1.277	0.25	8.71	-113.5	3.40	5.77	"
1520	10.6	19.54	1.282	0.19	8.72	-113.9	3.20	5.80	"
1525	11.0	19.42	1.279	0.18	8.72	-113.8	3.30	5.80	"
1530	11.4	19.45	1.280	0.16	8.72	-113.9	3.30	5.75	"
1535	11.8	19.34	1.276	0.17	8.72	-113.7	3.50	5.75	"
1540	12.2	19.29	1.275	0.18	8.73	-113.5	3.50	5.80	"
1545	12.6	19.36	1.277	0.17	8.74	-113.2	3.50	5.80	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: 0.3 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD – Duplicate ID No.: –

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/11/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1886 - MW17DW
Sample ID:
Sampling Team: K Tymrak / NWO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1550	13.0	19.22	1.272	0.17	8.75	-113.1	3.70	5.80	clear
1555	13.4	19.30	1.275	0.15	8.75	-113.0	4.10	5.80	"
1600	13.8	19.31	1.275	0.15	8.76	-113.1	2.80	5.80	"
1605	14.2	19.32	1.275	0.15	8.76	-112.8	3.10	5.80	"
1610	14.6	19.35	1.276	0.15	8.77	-113.2	3.40	5.80	"
1615	~~[illegible]~~ 15.0	19.36	1.277	0.16	8.77	-113.0	3.00	5.75	"
1620	~~[illegible]~~ 15.4	19.37	1.277	0.15	8.77	-112.9	2.50	5.75	"
1625	~~16.2~~ 15.8	19.40	1.278	0.15	8.77	-113.0	2.50	5.80	"
1630	~~16.~~ 16.2	19.46	1.280	0.14	8.77	-113.3	2.50	5.80	"
1635	16.8	19.44	1.279	0.13	8.77	-113.3	2.70	5.80	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate: 0.3 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

1 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather: CLOUDY, DRIZZLE, 50's

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW18DW
Sample ID: IR86 - MW18DW-09D
Sampling Team: M.S. RDU

Total Depth: 108.5 FT.(BTOC)
Depth to water: (-) 5.72 FT.(BTOC)
Water Column: 102.78 FT.
(x) .163 GAL/FT.
Well Volume: 16.75 GAL. x 1
Total Purge Vol.: 16.75 GAL.

Purge Device: BLADDER PUMP

Pump Inlet Depth 103 FT.(BTOC)

Water Quality Meter: YSI / 14006
Depth to Water / Date and Time: 5.72 12/15/09 ~~0150~~ 1350 MS

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Date: / Time:								
Method:								

PAGE 2

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1410	.5	19.45	.873	1.86	8.02	14.0	200	5.80	
1420	1.2	19.48	.875	.72	7.85	-56.3	>999	5.78	
1430	1.8	19.44	.872	.64	7.76	-106.9	900	5.78	
1440	2.6	19.49	.858	.44	7.60	-119.1	750	6.50	
1450	3.4	19.46	.851	.39	7.56	-123.5	550	6.48	
1500	4.3	19.46	.849	.29	7.55	-126.6	360	6.50	
1510	5.0	19.52	.851	.34	7.56	-127.7	300	6.50	
1520	5.75	19.47	.850	.27	7.54	-131.1	220	6.50	
1540	~~6.25~~ 10	19.39	.849	.22	7.54	-133.0	220	6.50	
1550	7.75	19.36	.845	0.32	7.54	-135.4	220	6.50	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1400 Purge Rate: 350 ml/min

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe^{2+} ___ mg/L

MS/MSD
Duplicate ID No.: IR86-GW18DW-D-09D 1715

Signature(s):

CH2MHILL

2 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather: CLOUDY, PRECIP, 50's

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW18DW
Sample ID: IR86 - MW18DW-090
Sampling Team: M.S. RDW

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

PAGE 1

Purge Device:

PAGE 1

Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time: PAGE 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
~~2~~	~~0.163~~
4	0.653
6	1.469

SAMPLE DATA

Date: 12/15/09 Time: 1710	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	19.37	.847	0.27	7.54	-146.4	110		

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1600	8.5	19.38	.848	0.31	7.54	-137.2	120	6.50	
1610	9.5	19.42	.848	0.31	7.55	-139.5	120	6.50	
1620	10.5	19.42	.848	0.22	7.55	-140.6	110	6.50	
1630	11.75	19.41	.848	0.24	7.54	-142.1	110	6.50	
1640	13.0	19.40	.847	0.29	7.55	-143.0	120	6.50	
1650	14.25	19.38	.847	0.16	7.55	-145.3	120	6.50	
1700	15.50	19.38	.847	0.27	7.55	-146.2	120	6.50	
1705	16.1	19.38	.847	0.27	7.55	-146.3	110	6.50	
1710	16.75	19.37	.847	0.27	7.54	-146.4	110	6.50	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1400 Purge Rate: 350 ml/min
Nitrate 4.4 mg/L
Nitrite 0.0 mg/L
Fe^{2+} 0.6 mg/l

MS/MSD Duplicate ID No.: IR86-GW18DW-D-090 1715
Signature(s): M. S.

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather: 60° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW19DW
Sample ID: IR86-GW19DW-090
Sampling Team: D. Brown/CLT

Total Depth: 95.50 FT.(BTOC)
Depth to water: (-) 5.03 FT.(BTOC)
Water Column: 90.02 FT.
(x) .163 GAL/FT.
Well Volume: 14.67 GAL.
Total Purge Vol.: 14.8 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 90' FT.(BTOC)

Water Quality Meter: YSI 556 S/N 04180
Depth to Water / Date and Time: 5.03 12/14/09 1010

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/14/09 Time: 1310 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	19.6	.573	.31	7.21	-136.1	7.5	5.83	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1020	0.8	19.2	.637	1.68	7.01	-34.3	175	5.08	cloudy, no odor
1030	1.6	19.3	.585	1.62	7.12	-39.7	123	5.19	
1040	2.4	19.3	.621	1.43	7.15	-41.3	165	5.23	
1050	3.2	19.3	.611	1.51	7.17	-42.7	141	5.48	
1100	4.0	19.4	.599	1.37	7.17	-42.9	117	5.59	clear, no odor
1110	4.8	19.4	.583	1.05	7.17	-45.5	89	5.71	
1120	5.6	19.4	.595	1.01	7.21	-49.9	54	5.75	
1130	6.4	19.4	.594	.93	7.22	-78.2	32	5.77	
1140	7.2	19.4	.590	.65	7.22	-101.3	22.1	5.79	
1150	7.8	19.5	.598	.43	7.23	-121.3	17.8	5.79	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Fe, Mn Metals by EPA Method 6010B	HNO_3	~~250~~ ~~500 ml~~ poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe = 2.1 mg/L

Purge Start Time: 1010
Purge Rate: 0.3 L/min

Missing well cap!

MS/MSD
Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather: 60° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW19DW
Sample ID: IR86-GW19DW-09D
Sampling Team: D. Brown/CLT

Total Depth: 95.50 FT.(BTOC)
Depth to water: (-) 5.03 FT.(BTOC)
Water Column: 90.02 FT.
(x) .163 GAL/FT.
Well Volume: 14.67 GAL.
Total Purge Vol.: 14.8 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 90' FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.03 12/14/09 1010
5% Drawdown = 4.5 ft

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time: / Method:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1220	11.0	19.5	.583	.31	7.21	-135.7	12.3	5.83	Clear, No odor
1230	11.8	19.6	.571	.30	7.21	-134.2	8.3	5.83	
1240	12.7	19.6	.578	.29	7.22	-129.7	7.1	5.83	
1250	13.6	19.6	.571	.32	7.22	-138.6	9.2	5.83	
1300	14.2	19.6	.573	.31	7.21	-135.5	6.4	5.83	
1310	14.8	19.6	.573	.31	7.21	-136.1	7.5	5.83	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1010 Purge Rate:

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe = 2.1 mg/L

Went to Field Area of flightline @ 1150 to carry out Deep Marine Battery to Kaitlin. Missed Readings from 1150 to 1220

MS/MSD Duplicate ID No.:

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 58°, Rain

Project Number: 389017.FI.FS.86
Well ID: IR86-MW221W
Sample ID: IR86-GW221W-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 64 FT.(BTOC)
Depth to water: (-) 6.00 FT.(BTOC)
Water Column: 58 FT.
(x) 0.163 GAL/FT.
Well Volume: 9.45 GAL. x3 = 28.4
Total Purge Vol.: ~11 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~59 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 12/13/09 6.00 1420

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 1

SAMPLE DATA

Date: 12/13/09 Time: 1550 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	21.33	0.336	0.18	7.05	-146.9	1.58	6.15	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1425	~1/4	21.59	0.401	12.33	6.79	-90.4	16.6	6.05	Clear
1430	~1/2	21.55	0.404	1.44	6.86	-111.8	2.69	6.11	Clear
1440	~1 1/2	21.45	0.371	0.54	6.96	-127.6	1.85	6.11	Clear
1450	~2 1/2	21.44	0.353	0.39	7.01	-136.1	1.48	6.19	Clear
1500	>3 1/2	21.40	0.347	0.29	7.02	-139.5	1.45	6.21	Clear
1510	~4 3/4	21.37	0.336	0.25	7.04	-142.8	1.41	6.20	Clear
1520	~6 1/4	21.32	0.343	0.23	7.04	-143.3	1.67	6.19	Clear
1530	>7	21.30	0.336	0.21	7.05	-145.5	2.66	6.07	Clear
1540	~8 1/4	21.32	0.339	0.20	7.05	-146.0	1.76	6.20	Clear
1550	>9 1/2	21.33	0.336	0.18	7.05	-146.9	1.58	6.15	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1422 Purge Rate: (see below)
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.6 mg/L

1425 flow rate increase b/c <0.25 L/min
1435 flow rate increase b/c ~>0.25 L/min (new rate = ~0.4 L/min)
1452 flow rate increased to ~0.45 L/min

MS/MSD
Duplicate ID No.:
Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW27IW (KAB)
Sample ID: ~~[illegible]~~ IR86-GW27IW-09D
Sampling Team: K. Ramsey / CLT

Total Depth: * 29.81 FT.(BTOC)
Depth to water: (-) 3.14 FT.(BTOC)
Water Column: 26.67 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.34 GAL.
Total Purge Vol.: ~12 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 3.14 12/10/09 ~~[illegible]~~ 1250

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 3

SAMPLE DATA

Date: 12/10/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see pg 3			—	—	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	±3%	±10%	±0.1	±10 mv	<10		
1300	>1/4	*22.66	0.189	3.07	5.05	-57.7	12.8	3.25	Clear / Slight Odor
1305	>3/4	22.50	0.188	0.54	5.02	-75.5	13.8	3.31	Clear / Slight Odor
1310	~1 1/4	22.46	0.188	0.42	5.02	-79.8	20.1	3.24	Clear / Slight odor
1315	>1 1/2	22.45	0.188	0.34	5.01	-80.1	27.8	3.31	Clear / Slight Odor
1320	>2	22.46	0.188	0.32	5.01	-85.4	29.7	3.25	Clear / Slight Odor
1330	>3	22.50	0.182	0.25	5.07	-92.9	29.3	3.20	Clear / Slight Odor
1335	<3 1/2	22.43	0.197	0.24	5.12	-96.5	30.0	3.25	Clear / Slight Odor
1340	~3 3/4	22.47	0.203	0.23	5.19	-101.1	28.6	3.26	Clear
1345	>4	22.44	0.216	0.21	5.29	-105.5	23.6	3.21	Clear
1350	~4 1/2	22.47	0.237	0.21	5.40	-112.5	18.4	3.21	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1256 Purge Rate: ~0.35 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 3.4 mg/L

* Tagged bottom to ensure measuring correct well

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW271W
Sample ID: ~~IR86-MW271~~ IR86-GW271W-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.81 FT.(BTOC)
Depth to water: (-) 3.14 FT.(BTOC)
Water Column: 26.67 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.34 GAL.
Total Purge Vol.: ~12 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 3.14 1250 12/10/09

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 3

SAMPLE DATA

Date: 12/10/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see pg 3			—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1400	~5 1/4	22.38	0.256	0.22	5.49	-121.7	13.0	3.25	Clear
1405	>5 1/2	22.34	0.272	0.19	5.56	-125.2	9.95	3.21	Clear
1410	<6	22.31	0.289	0.18	5.61	-128.4	8.03	3.21	Clear
1415	>6 1/4	22.34	0.301	0.19	5.66	-132.4	6.95	3.21	Clear
1420	<7	22.35	0.316	0.17	5.70	-135.0	5.83	3.25	Clear
1425	~7 1/4	22.33	0.327	0.18	5.73	-138.2	5.27	3.26	Clear
1430	>7 1/2	22.28	0.338	0.18	5.76	-139.6	5.87	3.20	Clear
1435	~8	22.34	0.349	0.16	5.79	-142.3	4.73	3.21	Clear
1440	>8 1/4	22.30	0.360	0.17	5.82	-144.6	4.59	3.21	Clear
1445	~8 1/2	22.33	0.366	0.17	5.83	-145.3	4.00	3.21	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1256 Purge Rate: ~0.35 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 3.4 mg/L

*1352 Pump working intermittantly - car battery died
1357 D. Brown jumps car 1358 pump re-started

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW271W
Sample ID: 1R86-GW271W-09D
Sampling Team:

Total Depth: 29.81 FT.(BTOC)
Depth to water: (-) 3.14 FT.(BTOC)
Water Column: 26.67 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.34 GAL.
Total Purge Vol.: ~12 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 3.14 1250 12/10/09

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 3 of 3

SAMPLE DATA

Date: 12/10/09 Time: 1458	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	22.21	0.388	0.16	5.88	-150.2	3.69	3.21	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1446	<9	22.35	0.371	0.16	5.84	-146.7	4.24	3.21	Clear
1450	>9	22.35	0.378	0.16	5.86	-147.9	3.84	3.25	Clear
1453	~9 1/2	22.28	0.382	0.16	5.87	-148.4	4.20	3.26	Clear
1456	~9 3/4	22.26	0.386	0.15	5.87	-148.9	3.46	3.26	Clear
1458	~10	22.21	0.388	0.16	5.88	-150.2	3.69	3.21	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1256 Purge Rate: ~0.35 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 3.4 mg/L

1459 : Cond = 0.389 mS/cm (w/in 3%)

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-GW29IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW29IW-090
Date:	12/15/09	Sampling Team:	M. SMITH/BRW
Weather:	CLOUDY. 50'S		D. BROWN/CLT

Total Depth:	59.54	FT.(BTOC)	Water Quality Meter:	YSI 14006
Depth to water:	(-) 6.32	FT.(BTOC)	Depth to Water / Date and Time:	6.32' 12/15/09 0940
Water Column:	53.22	FT.		
	(x) .163	GAL/FT.		
Well Volume:	8.67	GAL. x 1		
Total Purge Vol.:	8.67	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	54.0	FT.(BTOC)		

PID=0.0 PPM VOC

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 2						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0955	.25	21.01	.851	1.19	6.78	-92.1	900	6.39	
1000	.6	20.99	.865	.66	6.71	-99.8	1000	6.37	
1005	.9	20.98	.850	.54	6.80	-102.7	800	6.41	
1010	1.3	20.95	.822	.41	6.81	-104.3	700	6.43	
1015	1.6	20.92	.809	.39	6.82	-104.2	650	6.39	
1020	1.9	20.88	.794	.35	6.83	-105.1	600	6.40	
1025	2.2	20.87	.777	.35	6.83	-105.5	550	6.40	
1030	2.6	20.86	.765	.32	6.84	-106.0	450	6.40	
1035	3.0	20.89	.748	.31	6.85	-106.8	390	6.40	
1040	3.4	20.96	.739	.27	6.85	-107.0	330	6.40	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0950 Purge Rate: 300

Nitrate PAGE 3 mg/L

Nitrite ___ mg/L

Fe^{2+} ___ mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-GW291W-
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW291W-090
Date:	12/15/09	Sampling Team:	M. SMITH HI RDU
Weather:	CLOUDY, 50's		

Total Depth:		FT.(BTOC)	Water Quality Meter:	
Depth to water:	(-)	FT.(BTOC)	Depth to Water / Date and Time:	PAGE 1
Water Column:	PAGE 1	FT.		
	(x)	GAL/FT.		
Well Volume:		GAL.		
Total Purge Vol.:		GAL.		
Purge Device:	PAGE 1			
Pump Inlet Depth		FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Date: / Time:								
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1045	3.9	20.93	.730	.25	6.86	-107.9	270	6.40	
1050	4.4	20.92	.745	.24	6.86	-107.3	340	6.40	
1055	4.9	20.93	.726	.21	6.87	-108.5	240	6.40	
1100	5.4	20.86	.715	.24	6.87	-109.2	180	6.40	
1105	5.9	20.88	.704	.21	6.88	-110.3	150	6.40	
1110	6.4	20.91	.702	.19	6.88	-110.3	150	6.40	
1115	6.9	20.91	.699	.20	6.88	-110.6	110	6.40	
1120	7.4	20.93	.697	.20	6.88	-110.8	110	6.40	
1125	7.9	20.87	.696	.20	6.88	-110.8	80	6.40	
1130	8.4	20.85	.693	.18	6.88	-111.4	85	6.40	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate_____ mg/L

Nitrite _____ mg/L

Fe^{2+} ___ mg/L PAGE 1

MS/MSD _____ Duplicate ID No.: _____

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/15/09
Weather: CLOUDY, 50's

Project Number: 389017.FI.FS.86
Well ID: IR86-GW291W
Sample ID: IR86-GW292W-090
Sampling Team: M. SMITH IRDW

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

PAGE 1

Purge Device:
Pump Inlet Depth FT.(BTOC)

PAGE 1

Water Quality Meter:
Depth to Water / Date and Time: PAGE 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/15/09 Time: 1145	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	20.80	.685	.19	6.88	-112.5	70.0	6.40	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1135	8.9	20.81	.690	.21	6.88	-111.7	70.0	6.40	
1140	9.4	20.83	.689	.19	6.88	-112.0	70.0	6.40	
1145	9.9	20.80	.685	.19	6.88	-112.5	70.0	6.40	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 8.8 mg/L 2.
Nitrite 0.0 mg/L
Fe^{2+} 3.6 mg/l

Purge Start Time: PAGE 1
Purge Rate: 400 ml/min

MS/MSD
Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/11/09
Weather: 40°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW301W
Sample ID: IR86-GW301W-09D
Sampling Team: K. Ramsey/CLT

Total Depth: ~55 FT.(BTOC)
Depth to water: (-) 5.06 FT.(BTOC)
Water Column: ~50 FT.
(x) 0.163 GAL/FT.
Well Volume: ~8.96 GAL.
Total Purge Vol.: ~11 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~50 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.06 12/11/09 0955

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/11/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see	pg	2	—	—	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	±3%	±10%	±0.1	±10 mv	<10		
1010	~1/2	18.77	0.334	1.20	6.87	-86.4	3.69	5.11	Cloudy/None
1015	~1 1/2	19.11	0.394	0.61	7.04	-123.9	117	5.16	Cloudy/None
1020	>1 3/4	18.99	0.396	0.47	7.08	-130.1	55.6	5.20	Cloudy/None
1035	~3 1/2	19.06	0.390	0.31	7.09	-136.4	31.1	5.11	Clear
1040	<4 1/2	19.23	0.382	0.26	7.12	-140.4	15.4	5.19	Clear
1045	~5	19.12	0.376	0.26	7.11	-139.0	14.3	5.15	Clear
1050	>5 1/2	19.12	0.371	0.24	7.11	-139.8	13.3	5.21	Clear
1055	~6	19.20	0.370	0.23	7.12	-140.9	10.9	5.11	Clear
1100	~6 3/4	19.29	0.367	0.21	7.11	-141.4	11.0	5.11	Clear
1105	~7 1/4	19.29	0.363	0.20	7.13	-143.2	10.2	5.11	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ~1003 Purge Rate: ~0.4 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.8 mg/L

1044: May Exterminating treating building approx 10 ft from well

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/11/09
Weather: 40°, P. cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW301W
Sample ID: IR86-GW301W-09D
Sampling Team: K. Ramsey / CLT

Total Depth: ~55 FT.(BTOC)
Depth to water: (-) 5.06 FT.(BTOC)
Water Column: ~50 FT.
(x) 0.163 GAL/FT.
Well Volume: ~8.96 GAL.
Total Purge Vol.: ~11 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~50 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.06 12/11/09 0955

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/11/09 Time: 1120	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	19.22	0.353	0.21	7.15	-144.5	6.97	5.18	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1110	~7 3/4	19.19	0.359	0.21	7.14	-143.7	8.32	5.21	Clear
1115	~8 1/2	19.27	0.356	0.20	7.14	-144.1	7.72	5.19	Clear
1120	>9	19.22	0.353	0.21	7.15	-144.5	6.97	5.18	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ~1003 Purge Rate: ~0.4 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.8 mg/L

see notes on pg 7

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

CH2MHILL

1 of 13

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: SUNNY, 60's

Project Number: 389017.FI.FS.86
Well ID: IR86-MW31IW
Sample ID: IR86-GW31IW-0912
Sampling Team: M.S. / RDU

Total Depth: 53.70 FT.(BTOC)
Depth to water: (-)6.52 FT.(BTOC)
Water Column: 47.18 FT.
(x) .163 GAL/FT.
Well Volume: 7.69 GAL. x 1
Total Purge Vol.: 7.69 GAL.

Purge Device: BLADDER PUMP

Pump Inlet Depth 48' FT.(BTOC)

Water Quality Meter: YSI 16004
Depth to Water / Date and Time: 6.52 12/16/09 1035

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:			PAGE 3					

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1040	.2	20.20	1.215	1.24	7.35	-95.1	650	6.50	RED/CLAY color
1045	.6	20.43	1.188	0.49	7.06	-96.2	950	6.62	
1050	1.1	20.49	1.163	0.39	6.97	-98.7	>1000	6.65	
1055	1.3	20.27	1.160	0.34	6.94	-99.9	>1000	6.60	
1100	1.5	20.30	1.150	0.40	6.92	-100.1	>1000	6.65	
1105	1.75	20.29	1.153	0.29	6.89	-99.9	>1000	6.70	
1110	2.3	20.31	1.148	0.30	6.87	-101.4	>1000	6.75	BROWN
1115	2.75	20.37	1.145	0.24	6.86	-103.4	>1000	6.70	
1120	3.20	20.49	1.142	0.24	6.85	-104.6	>1000	6.70	
1125	3.70	20.46	1.137	0.28	6.85	-106.0	1000	6.70	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1035 Purge Rate: 350

Nitrate ____ mg/L
Nitrite PAGE 3 mg/L
Fe^{2+} ____ mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

2 of 3

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: SUNNY, 60's

Project Number: 389017.FI.FS.86
Well ID: MW 31 EW
Sample ID: IR86-MW31EW-0001
Sampling Team: M.S. / RDC

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
Purge Device:
Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time: PAGE 4

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1130	4.30	20.39	1.136	0.23	6.83	-106.2	1000	6.70	
1135	4.80	20.33	1.131	0.23	6.83	-107.4	1000	6.70	
1140	5.30	20.31	1.129	0.23	6.82	-107.3	1000	6.70	
1145	5.80	20.39	1.126	0.21	6.82	-108.4	1000	6.70	
1150	6.20	20.44	1.124	0.22	6.83	-107.7	800	6.70	
1155	6.70	20.35	1.121	0.20	6.83	-107.4	600	6.70	
1200	7.20	20.39	1.117	0.26	6.81	-108.5	500	6.70	
1205	7.70	20.43	1.114	0.18	6.82	-109.2	370	6.70	
1210	8.20	20.47	1.109	0.25	6.80	-109.6	310	6.70	
1215	8.70	20.39	1.107	0.23	6.81	-110.4	240	6.70	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1035 Purge Rate: 350
Nitrate mg/L
Nitrite mg/L
Fe2+ PAGE 3

MS/MSD Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: SUNNY, 60'S

Project Number: 389017.FI.FS.86
Well ID: I286 - MW31 IW
Sample ID: I286 - GW31 IW - 0909
Sampling Team: M.S. / RDC

Total Depth: _____ FT.(BTOC)
Depth to water: (-) _____ FT.(BTOC)
Water Column: _____ FT.
(x) PAGE1 _____ GAL/FT.
Well Volume: _____ GAL.
Total Purge Vol.: _____ GAL.

Purge Device: PAGE1

Pump Inlet Depth _____ FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time: PAGE1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/16/09 Time: 1240	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	20.32	1.091	0.20	6.82	-112.7	130	6.70	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1220	9.70	20.41	1.104	0.23	6.81	-110.5	210	6.70	
1225	9.70	20.51	1.099	0.22	6.81	-111.2	190	6.70	
1230	10.20	20.41	1.095	0.22	6.81	-111.5	160	6.70	
1235	10.20	20.39	1.095	0.20	6.81	-111.6	140	6.70	
1240	10.70	20.32	1.091	0.20	6.82	-112.7	130	6.70	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1035 Purge Rate: 350
Nitrate 0.0 mg/L
Nitrite _____ mg/L
Fe^{2+} 2.2

MS/MSD — Duplicate ID No.: —
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-GW31DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW31DW-09D
Date:	12/18/09	Sampling Team:	D. Brown
Weather:	@ 43° Rain		

Total Depth:	90.00	FT.(BTOC)	Water Quality Meter:	YSI S/n
Depth to water:	(-) 5.13	FT.(BTOC)	Depth to Water / Date and Time:	5.13 12/18/09
Water Column:	84.87	FT.		
	(x) .163	GAL/FT.		
Well Volume:	13.83	GAL.		
Total Purge Vol.:		GAL.		
Purge Device:	Monsoon Pump			
Pump Inlet Depth	85'	FT.(BTOC)		

13.83*3 = 41.49

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 1 of 2

SAMPLE DATA

Date: 12/18/09 Time: 1730 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	18.4	.604	.20	6.79	-103	7.1	15.9	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1630	4.8	19.1	.713	1.15	7.03	35	384	7.83	Cloudy, no odor
1635	9.8	19.0	.703	0.81	6.99	17	210	9.15	↓
1640	12.3	18.6	.685	0.32	6.86	-21	103	11.38	↓
1650	14.1	18.5	.673	0.28	6.84	-43	76	13.29	↓
1655	18.7	18.5	.670	.25	6.81	-49	35	15.31	↓
1700	21.3	18.4	.665	.21	6.80	-75	17	15.57	Clear, no odor
1705	24.7	18.4	.605	.23	6.81	-93	12	15.82	↓
1710	28.9	18.4	.613	.21	6.80	-94	8.3	15.85	↓
1715	32.1	18.4	.606	.20	6.79	-101	7.2	15.88	↓
1720	36.8	18.4	.603	.20	6.79	-105	7.9	15.89	↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1625 Purge Rate: 0.5-1 gallon/min

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe 0.3 mg/L

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/18/09
Weather: 43° Rain

Project Number: 389017.FI.FS.86
Well ID: IR86-MW31DW
Sample ID: IR86-GW31DW-09D
Sampling Team: D. Brown / CLT

Total Depth: See FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: Sheet GAL.
Total Purge Vol.: GAL.
Purge Device: 1
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 2 of 2

SAMPLE DATA

Date: / Time: / Method:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1725	40.3	18.4	.608	.20	6.79	-107	8.3	15.90	clear, no odor
1730	44.9	18.4	.604	.20	6.79	-103	7.1	15.90	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD | Duplicate ID No.:

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: 50° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW34IW
Sample ID: IR86-GW34IW-09D
Sampling Team: D. Brown/CLT

Total Depth: 45.00 FT.(BTOC)
Depth to water: (-) 5.05 FT.(BTOC)
Water Column: 39.95 FT.
(x) .163 GAL/FT.
Well Volume: 6.51 GAL.
Total Purge Vol.: GAL.

Water Quality Meter: YSI 556 SN 14218
Depth to Water / Date and Time: 5.05 12/17/09

5% * 39.95 = 1.99 ft

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Purge Device: Bladder Pump

Pump Inlet Depth 40' ~~35'~~ FT.(BTOC)

Sheet 1 of 2

SAMPLE DATA

Date: 12/17/09 Time: 1200	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	17.8	.828	.37	7.75	-16.2	24	5.65	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1035	0.6	18.1	.951	1.34	7.31	103	321	5.09	Cloudy, no odor
1040	1.3	18.0	.940	1.21	7.45	54.1	275	5.23	
1045	1.9	17.5	.807	1.05	7.58	32.1	261	5.28	
1050	2.5	17.7	.913	1.03	7.69	27.3	255	5.34	
1055	3.2	17.7	.900	.73	7.71	18.1	203	5.41	
1100	3.6	17.6	.813	0.44	7.78	-10.1	178	5.53	
1105	4.1	17.7	.805	.38	7.75	-13.5	155	5.59	Clear, no odor
1110	4.8	17.7	.815	.35	7.74	-14.1	121	5.61	
1115	5.3	17.7	.823	.36	7.74	-14.8	117	5.61	
1120	5.8	17.7	.817	.36	7.74	-15.2	93	5.61	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1030 Purge Rate: 0.4-0.5 L/min

Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe 1.7 mg/L

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: 50° sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW34IW
Sample ID: IR86-GW34IW-090
Sampling Team: D. Brown/CLT

Total Depth: ____ FT.(BTOC)
Depth to water: (-) See ____ FT.(BTOC)
Water Column: ____ FT.
(x) Sheet ____ GAL/FT.
Well Volume: ____ GAL.
Total Purge Vol.: ____ GAL.
Purge Device: 1
Pump Inlet Depth ____ FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1125	6.3	17.7	.819	.36	7.73	-16.1	85	5.63	clear, no odor
1130	6.8	17.8	.813	.36	7.73	-17.1	73	5.65	
1135	7.4	17.8	.810	.37	7.73	-16.5	54	5.65	
1140	7.9	17.8	.821	.36	7.73	-16.6	39	5.65	
1145	8.1	17.8	.820	.36	7.73	-17.2	29	5.65	
1150	8.5	17.8	.818	.37	7.73	-15.8	28	5.65	
1155	8.9	17.8	.822	.37	7.73	-18.1	25	5.65	
1200	9.5	17.8	.828	.37	7.75	-16.2	24	5.65	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: ____ Purge Rate: ____
Nitrate ____ mg/L
Nitrite ____ mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/9/09
Weather: 65, breezy

Project Number: 389017.FI.FS.86
Well ID: 1286 - MW381WA -
Sample ID: 1286 - GW381WA - 09D
Sampling Team: K. Tymrak

Total Depth: 33 FT.(BTOC)
Depth to water: (-) 6.39 FT.(BTOC)
Water Column: 26.61 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.33 GAL.
Total Purge Vol.: 13 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 30 ~~27~~ FT.(BTOC)

Water Quality Meter: YSI Pine # 14218, Hanna #08988
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time: / Method:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1615	0.5	21.28	0.140	1.97	4.25	237.9	30.0	7.15	clear
1620	0.9	21.30	0.159	1.70	4.27	240.6	27.0	7.43	"
~~1625~~	~~1.25~~	~~21.21~~	~~4.457~~	~~0.82~~	~~4.02~~	~~189.7~~	~~56.0~~	~~9.63~~	"
1630	1.65	21.22	3.352	0.76	4.09	193.5	37.0	11.37	"
1635	1.90	21.22	3.280	0.89	4.13	188.7	35.0	11.93	"
1640	2.20	21.23	3.217	1.00	4.14	181.9	30.0	12.85	"
1645	2.50	21.23	3.300	1.00	4.13	180.1	27.0	13.42	"
1650	2.80	21.23	3.574	0.96	4.11	175.8	25.0	14.25	"
1655	3.10	21.21	3.784	0.90	4.09	173.7	21.0	14.85	"
1700	3.50	21.21	3.945	0.85	4.07	170.1	18.0	15.40	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1605 Purge Rate: 0.30 L/min

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

* reset pump to 30' btoc - it was originally set too high

MS/MSD — Duplicate ID No.: —

gnature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: ~~12/9/09~~ 12/10/09
Weather: 50°, overcast, breezy

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW38I.W A
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: FT.(BTOC)
Depth to water: 12/10/09 (-) 5.48 FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see other sheet

Water Quality Meter: Same as previous
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time: / Method:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1705	3.80	21.21	3.875	0.85	4.07	170.1	16.0	16.0	clear
1710	4.30	21.25	3.702	0.90	4.12	163.5	15.0	16.9	"
1715	5.0	21.24	3.731	0.95	4.13	171.3	19.0	17.5	"
2/10 * ~~1720~~									
0745 ~~1725~~	5.25	20.33	4.619	1.96	4.10	193.7	21.0	7.15	clear
0750 ~~1730~~	5.75	20.72	4.757	2.37	4.13	189.0	19.0	9.50	"
0755	6.30	20.82	4.776	2.10	4.13	185.7	18.0	11.55	"
0800	6.75	20.83	4.792	1.46	4.13	180.9	15.0	13.0	"
0805	7.50	20.82	4.793	1.47	4.14	177.8	12.0	14.75	"
0810	8.0	20.82	4.741	1.87	4.15	175.8	11.0	15.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0740 on 12/10/09 Purge Rate: ~~0.4 L/min~~ 0.5 L/min @ on 12/10

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

* stopped on 12/9 b/c of darkness & need to purge 3 well volumes

MS/MSD Duplicate ID No.:

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1886 - MW38IWA
Sample ID:
Sampling Team: K. Tymrak / NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See other sheet

Water Quality Meter: same as previous
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/10/09 Time: 0900	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.84	4.209	1.59	4.31	151.5	11.0	22.38	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0815	8.5	20.80	4.621	0.99	4.17	174.0	11.0	16.75	clear
0820	9.1 ~~9.30~~	20.79	4.431	1.13	4.19	169.9	11.0	17.40	"
0825	9.5 ~~9.80~~	20.78	4.089	1.46	4.22	166.9	15.0	18.5	"
0830	10.0	20.82	3.945	1.71	4.24	163.9	12.0	19.25	"
0835	10.5	20.81	3.972	1.75	4.27	157.5	12.0	19.99	"
0840	10.95	20.80	4.008	1.75	4.27	157.4	11.0	20.65	"
0845	11.5	20.76	4.105	1.38	4.28	160.9	11.0	21.30	"
0850	12.0	20.75	4.119	1.33	4.30	151.3	11.0	21.65	"
0855	12.4	20.80	4.169	1.60	4.33	155.9	11.0	22.10	"
0900	13.1	20.84	4.209	1.59	4.31	151.5	11.0	22.38	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 5.8 mg/L

MS/MSD —
Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 60°, partly sunny/breezy

Project Number: 389017.FI.FS.86
Well ID: 12886-MW381WB-
Sample ID: 12886-GW381WB-09D
Sampling Team: K. Tymczak / MWD

Total Depth: 43 FT.(BTOC)
Depth to water: (-) 6.25 FT.(BTOC)
Water Column: 36.75 FT.
(x) 0.163 GAL/FT.
Well Volume: 5.99 GAL.
Total Purge Vol.: 8.3 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 40 FT.(BTOC)

Water Quality Meter: YSI #14218, Hanna #089188
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/10/09 Time: 1200	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.89	1.504	0.23	7.05	26.1	10.0	6.86	"

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1040	0.6	20.82	1.455	1.02	7.15	-102.3	35.0	6.26	clear
1045	0.8	20.77	1.500	0.85	7.13	-95.5	27.0	6.86	clear
1050	1.25	20.63	1.523	0.49	7.09	-69.8	26.0	6.86	"
1055	1.75	20.71	1.524	0.32	7.03	-57.7	23.0	6.27	"
1100	2.25	20.76	1.521	0.28	7.02	-49.4	23.0	6.26	"
1105	2.75	20.90	1.523	0.26	7.00	-43.9	21.0	6.26	"
1110	3.40	20.94	1.517	0.23	7.05	-52.4	18.0	6.26	"
1015	4.0	20.89	1.512	0.19	7.06	-44.9	15.0	6.26	"
1120	4.4	20.91	1.512	0.23	7.08	-34.7	15.0	6.26	"
1125	5.0	20.89	1.508	0.35	7.07	-29.2	16.0	6.26	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1030 Purge Rate: 0.3 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.4 mg/L
Bumped up to 0.45 L/min @ 1045

MS/MSD — Duplicate ID No.: —
Signature(s):

CH2MHILL

Page 2 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW381WB
Sample ID:
Sampling Team: K. Tymrak / NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see other sheet

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1130	5.5	20.88	1.506	0.24	7.04	-27.8	14.0	6.27	clear
1135	6.1	20.84	1.504	0.23	7.04	-26.9	12.0	6.27	clear
1140	6.6	20.86	1.504	0.24	7.03	-26.7	12.0	6.27	clear
1145	7.1	20.88	1.504	0.22	7.04	-25.9	11.0	6.26	"
1150	7.7	20.89	1.503	0.22	7.06	-25.5	11.0	6.26	"
1155 ~~1200~~	8.3	20.89	1.504	0.23	7.05	-26.1	10.0	6.26	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/08
Weather: 65, Partly sunny

Project Number: 389017.FI.FS.86
Well ID: 1886-MW381WC-
Sample ID: 1286-GW381WC-09D
Sampling Team: K. Tymrak / NWD

Total Depth: 54.43 FT.(BTOC)
Depth to water: (-) 6.85 FT.(BTOC)
Water Column: 47.15 FT.
(x) 0.163 GAL/FT.
Well Volume: 7.68 GAL.
Total Purge Vol.: 23.4 GAL.

Water Quality Meter: YSI #14218, Hanna# 08988
Depth to Water / Date and Time:

Purge Device: Bladder Pump

Pump Inlet Depth ~~40~~ 53 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/10/09 Time: 1610	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.80	2.669	0.57	6.90	-13.3	27.0	8.60	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1310	~~20~~0.75	20.36	1.895	0.47	7.24	-37.5	140	7.15	~~orange~~ orange
1315	1.10	20.16	2.062	0.35	7.12	-27.0	89.6	7.25	clear
1320	1.50	20.72	2.184	0.31	7.09	-24.8	45.0	7.35	clear
1325	1.90	20.75	2.252	0.27	7.07	-23.7	45.0	7.60	clear
1330	2.30	20.91	2.336	0.26	7.05	-21.0	55.0	7.95	"
1335	2.90	20.98	2.364	0.22	7.04	-19.7	53.0	8.20	"
1340	3.50	20.94	2.427	0.22	7.02	-17.4	50.0	9.25	"
1345	4.20	20.93	2.450	0.25	7.00	-15.6	42.0	8.35	"
1350	4.75	20.96	2.478	0.26	7.00	-15.0	35.0	8.30	"
1355	5.45	20.95	2.498	0.28	6.99	-14.5	33.0	8.35	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2/1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 4.0 mg/L
effervescence noted

Purge Start Time: ~~1245~~ 1300

Purge Rate: 0.3 L/min
bumped up flow rate to 0.5 L/min @ 1330 due to drawdown & need to purge 3 volumes

MS/MSD —
Duplicate ID No.: —
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 10/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW38ILWC
Sample ID:
Sampling Team: K. Tymrak / NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see other sheet

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1400	6.10	20.93	2.510	0.37	6.98	-14.1	32.0	8.45	clear
1405	6.75	20.92	2.533	0.42	6.98	-15.8	29.0	8.45	clear
1410	7.40	20.96	2.549	0.43	6.97	-15.8	26.0	8.45	"
1415	8.10	20.96	2.563	0.37	6.97	-14.7	22.0	8.50	"
1420	8.75	20.90	2.573	0.32	6.96	-14.5	20.0	8.60	"
1425	9.40	20.92	2.586	0.20	6.96	-14.6	19.0	8.55	"
1430	~~8.75~~ 10.1	20.94	2.599	0.19	6.95	-14.3	17.0	8.65	"
1435	10.75	20.90	2.608	0.19	6.94	-14.0	17.0	8.60	"
1440	11.40	20.89	2.612	0.18	6.94	-14.0	16.0	8.60	"
1445	12.10	20.92	2.628	0.18	6.93	-13.4	16.0	8.55	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW38ILWC
Sample ID:
Sampling Team: K. Tymrak

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

Purge Device:

Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1450	12.75	20.95	2.641	0.18	6.93	-13.0	16.0	8.65	clear
1455	13.40	20.93	2.638	0.18	6.93	-13.2	16.0	8.60	"
1500	14.10	20.90	2.362	0.17	6.94	-13.9	17.0	8.60	"
1505	14.75	20.89	2.645	0.18	6.93	-14.2	16.0	8.65	"
1510	15.40	20.92	2.652	0.25	6.93	-14.0	15.0	8.65	"
1515	16.10	20.92	2.656	0.38	6.93	-13.4	16.0	8.75	"
1520	16.75	20.91	2.661	0.27	6.92	-13.0	18.0	8.75	"
1525	17.40	20.90	2.663	0.20	6.91	-13.1	19.0	8.70	"
1530	18.10	20.89	2.666	0.19	6.91	-12.5	21.0	8.70	"
1535	18.75	20.86	2.665	0.18	6.92	-13.0	24.0	8.75	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate_____ mg/L
Nitrite _____ mg/L
Fe

MS/MSD Duplicate ID No.:

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW381WC
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see other sheet

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1540	19.40	20.89	2.662	0.19	6.91	-13.5	26.0	8.90	clear
1545	20.10	20.89	2.663	0.17	6.91	-13.8	28.0	8.70	"
1550	20.75	20.90	2.659	0.18	6.91	-13.5	29.0	8.70	"
1555	21.40	20.84	2.650	0.17	6.91	-13.4	28.0	8.60	"
1600	22.10	20.84	2.664	0.17	6.90	-13.2	27.0	8.55	"
1605	22.75	20.87	2.668	0.17	6.90	-13.4	27.0	8.55	"
1610	23.40	20.86	2.669	0.17	6.90	-13.3	27.0	8.60	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW39
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW39-10A
Date:	1-13-10	Sampling Team:	G. Little / CLT
Weather:	45°F Clear		

Total Depth:	30	FT.(BTOC)	Max D 5.89
Depth to water:	(-) 4.62	FT.(BTOC)	
Water Column:	25.38	FT. 5% = 1.27	
	(x) .163	GAL/FT.	
Well Volume:	4.1	GAL.	
Total Purge Vol.:	6.0	GAL.	
Purge Device:	Bladder Pump		
Pump Inlet Depth	28	FT.(BTOC)	

Water Quality Meter:

Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1-13-10 Time: 1530	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Pump	21.25	0.271	0.13	5.87	-83.4	28.0	5.38	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1440	0.5	21.08	0.266	1.45	6.04	-50.4	360	5.31	cloudy
1450	1.5	21.33	.271	0.39	5.96	-44.4	95.0	5.40	"
1500	3.0	21.39	.274	.21	5.95	-65.4	60.0	5.43	slightly cloudy
1510	4.0	21.34	.276	.18	5.93	-74.4	45.0	5.65	↓
1520	5.0	21.32	.275	.15	5.91	-79.7	35.0	5.35	↓
1530	6.0	21.25	.271	.13	5.87	-83.4	28.0	5.38	clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Fe, Mn ~~Metals~~ by EPA Method 6010B	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW 846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: 1435 Purge Rate: 0.18 gpm ~~min~~

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 4.0 mg/L

Collected sample @ 1530 for analysis listed above.

MS/MSD Duplicate ID No.:

Signature(s): Gordon Little

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW40
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW40-09D
Date:	12/15/09	Sampling Team:	K. Ramsey/CLT
Weather:	60°, Foggy		

Total Depth: * 29.81 FT.(BTOC)
Depth to water: (-) 5.98 FT.(BTOC)
Water Column: 23.83 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.88 GAL. x3 = 11.7
Total Purge Vol.: GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.98 12/15/09 0858

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

4½
4½

Page 1 of 2

SAMPLE DATA

Date: 12/15/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	—	see pg 2	—	—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0905	~¼	19.90	0.246	1.62	5.58	30.7	'L Lo'	6.16	cloudy
0910	< ¾	20.24	0.261	0.82	5.66	19.9	'L Lo'	6.08	cloudy
0920	~1½	20.36	0.208	0.46	5.38	47.5	'L Lo'	6.11	Cloudy
0930	~2½	20.44	0.195	0.31	5.24	53.0	'L Lo'	6.09	Cloudy
0940	>3½	20.54	0.194	0.31	5.23	51.6	783	6.16	Cloudy
0950	~5	20.53	0.192	0.30	5.20	51.6	353	6.11	Cloudy
1000	>6	20.53	0.192	0.27	5.16	50.9	193	6.20	Cloudy
1010	< 7½	20.54	0.191	0.25	5.17	49.9	129	6.21	cloudy
1020	~8½	20.53	0.189	0.28	5.16	49.1	97.8	6.21	Cloudy
1030	>9½	20.53	0.179	0.26	5.14	48.9	76.0	6.20	cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0902 Purge Rate: ~0.35 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 3.0 mg/L

* Tagged bottom to ensure on correct well
'L Lo' = Turbidity >1000 NTU
0934 purge rate increased to ~0.4 L/min.

MS/MSD — Duplicate ID No.: IR86-GW40D-09D (YES)
Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW40
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW40-09D
Date:	12/15/09	Sampling Team:	K. Ramsey / CLT
Weather:	60°, Foggy		

Total Depth:	29.81	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 5.98	FT.(BTOC)	Depth to Water / Date and Time:	5.98 12/15/09 0858
Water Column:	23.83	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	3.88	GAL. × 3 = 11.7		
Total Purge Vol.:		GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~25	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/15/09 Time: 1105	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	20.55	0.146	0.49	5.08	50.0	41.8	6.09	cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1040	<11	20.57	0.190	0.24	5.14	46.5	67.3	6.12	Cloudy
1045	<11½	20.59	0.189	0.24	5.13	46.4	63.3	6.13	Cloudy
1056	~12¼	20.31	0.147	1.56	5.12	48.6	65.1	6.21	Cloudy
1059	~12½	20.54	0.148	0.56	5.09	48.6	56.4	6.06	cloudy
1102	~12¾	20.56	0.147	0.53	5.07	51.5	42.9	6.06	cloudy
1105	~13	20.55	0.146	0.49	5.08	50.0	41.8	6.09	cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0902 Purge Rate: see pg 1

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 3.0 mg/L

see notes on pg 1

~~0948~~ 1010 paused purge to recalibrate YSI for conductivity.

1054 re-started purge.

~1100 discussed param. w/ D. Brown, permission to sample after readings 3 min apart

MS/MSD —— Duplicate ID No.: IR86-GW40D-09D (YES)

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/7/09
Weather: 58°, Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW41
Sample ID: IR86-GW41-09D
Sampling Team: K. Ramsey/CLT

Total Depth: 29.30 FT.(BTOC)
Depth to water: (-) 3.97 FT.(BTOC)
Water Column: 25.33 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.12 GAL. x 3 = 12.36
Total Purge Vol.: ~16 GAL.

Water Quality Meter: #06309 (YSI)
Depth to Water / Date and Time: 3.97 12/7/09 ~1400

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

+ 3

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Page 1 of ~~2~~ 3 (KAR)

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	—	See pg 3				—	—	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1440	~1/4	21.97	0.285	1.59	5.51	102.8	937 *	4.03	Lt Brown, cloudy
1445	~1	22.11	0.421	0.67	6.09	24.4	523	4.07	Lt Brown, cloudy
1450	~1 1/2	22.07	0.473	0.46	6.21	-7.7	357	4.03	Lt Brown, cloudy
1455	>2	22.05	0.501	0.42	6.32	-33.7	234	3.98	Cloudy
1500	>2 1/2	22.04	0.523	0.39	6.38	-50.9	174	4.00	Cloudy
1505	~3 1/4	21.99	0.541	0.33	6.42	-65.8	135	3.99	Cloudy
1510	>3 3/4	22.01	0.549	0.31	6.44	-78.7	111	4.01	Cloudy
1515	~4 1/2	21.99	0.558	0.29	6.47	-81.3	89.9	3.99	Cloudy
1520	~5	22.03	0.562	0.28	6.47	-85.5	82.9	4.03	Cloudy
1525	>5 1/2	21.99	0.557	0.28	6.49	-91.0	77.7	4.02	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1436 Purge Rate: ~0.5 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.5

* Hanna set on 'AVG' mode (1 reading only)

Nitrate 0 x 4.4 = 0 mg/L
Nitrite 0 x 3.3 = 0 mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/7/09
Weather: 58° Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW41
Sample ID: IR86-GW41-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.30 FT.(BTOC)
Depth to water: (-) 3.97 FT.(BTOC)
Water Column: 25.33 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.12 GAL.
Total Purge Vol.: ~16 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI #06309
Depth to Water / Date and Time: 3.97 12/7/09 ~1400

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

KAR

Page 2 of 3

SAMPLE DATA

Date: 12/7/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	See	pg	3	—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1530	~6 1/4	22.02	0.567	0.24	6.50	-93.7	62.1	4.02	Cloudy
1535	~7	22.05	0.621	0.22	6.51	-97.4	54.3	3.98	Clear
** 1540	~7 1/2	21.94	0.621	0.39	6.52	-82.7	49.8	3.98	Clear
1545	~8 1/4	22.00	0.626	0.30	6.51	-92.8	45.3	4.05	Clear
1550	~9	22.03	0.628	0.25	6.52	-99.1	42.1	4.01	Clear
1555	~9 1/4	21.95	0.628	0.23	6.52	-100.8	37.0	3.98	Clear
1600	~9 3/4	21.98	0.630	0.24	6.51	-101.9	36.0	4.09	Clear
1605	~10 3/4	21.99	0.632	0.23	6.52	-103.8	32.4	4.01	Clear
1610	~11 1/4	21.99	0.632	0.23	6.53	-105.6	29.0	3.99	Clear
1615	~11 3/4	21.99	0.633	0.23	6.53	-105.4	28.0	4.00	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.5

Purge Start Time: 1436
Purge Rate: ~0.5 L/min

** Emptied flow cell to purge sediment, refilled

Nitrate 0 x 4.4 = mg/L
Nitrite 0 x 3.3 = mg/L

MS/MSD —
Duplicate ID No.: —

Signature(s): Kelly A. Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/7/09
Weather: 58° Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW41
Sample ID: IR86-GW41-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.30 FT.(BTOC)
Depth to water: (-) 3.97 FT.(BTOC)
Water Column: 25.33 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.12 GAL. X
Total Purge Vol.: ~16 GAL.

Water Quality Meter: YSI #06309
Depth to Water / Date and Time: 3.97 12/7/09 ~1400

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 3 of 3

SAMPLE DATA

Date: 12/7/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	22.0	0.636	0.21	6.53	-108.7	23.6	4.02	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1620	~12¼	21.99	0.634	0.23	6.54	-107.4	28.3	4.09	Clear
1625	~13	22.05	0.635	0.22	6.53	-107.7	25.7	4.02	Clear
1630	~13½	22.04	0.635	0.23	6.53	-106.7	24.8	4.09	Clear
1635	~14	22.01	0.636	0.21	6.53	-108.7	23.6	4.02	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1436 Purge Rate: ~0.5 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.5 mg/L

Nitrate 0 × 4.4 = 0 mg/L
Nitrite 0 × 3.3 = 0 mg/L

MS/MSD ——— Duplicate ID No.: ———

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/12/09
Weather: 50°, overcast

Project Number: 389017.FI.FS.86
Well ID: 12886 - MW421W
Sample ID: 12886 - GW421W-09D
Sampling Team: K. Tymrak / NWO

Total Depth: 50.96 FT.(BTOC)
Depth to water: (-) 3.00 FT.(BTOC)
Water Column: 47.96 FT.
(x) 0.163 GAL/FT.
Well Volume: 7.81 GAL.
Total Purge Vol.: 12.70 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 47 FT.(BTOC)

Water Quality Meter: YSI #14128, Hanna #089288
Depth to Water / Date and Time: 12/12/09 1315 -3.00 ft btoc

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/12/09 Time: 1500	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.74	0.872	0.11	7.47	-149.6	200	3.25	Cloudy

* See page 2 for notes about sample

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1330	1.0	20.73	0.873	0.58	7.60	-146.9	550	3.25	Clear
1335	1.65	20.75	0.880	0.36	7.67	-149.6	450	3.25	Cloudy
1340	2.30	20.69	0.879	0.29	7.59	-148.4	400	3.25	"
1345	2.95	20.77	0.881	0.25	7.55	-148.7	370	3.25	"
1350	3.60	20.78	0.880	0.21	7.54	-148.9	360	3.25	"
1355	4.25	20.77	0.879	0.17	7.54	-149.2	350	3.25	"
1400	4.90	20.76	0.878	0.17	7.53	-149.0	330	3.25	"
1405	5.55	20.75	0.878	0.17	7.53	-149.0	310	3.25	"
1410	6.20	20.75	0.877	0.14	7.53	-149.3	290	3.25	"
1415	6.85	20.71	0.875	0.14	7.52	-148.9	280	3.25	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1300 Purge Rate: 0.5 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe^{2+} 2.0 mg/L

MS/MSD —
Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/12/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW421W
Sample ID:
Sampling Team: K. Tymrak / NLWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1400	7.50	20.70	0.874	0.13	7.50	-149.0	270	3.25	cloudy
1425	8.15	20.73	0.874	0.12	7.51	-149.0	260	3.25	cloudy
1430	8.80	20.77	0.875	0.12	7.49	-149.3	250	3.25	"
1435	9.45	20.63	0.871	0.12	7.48	-149.0	240	3.25	"
1440	10.10	20.71	0.872	0.11	7.48	-149.2	230	3.25	"
1445	10.75	20.71	0.872	0.11	7.48	-149.4	220	3.25	"
1450	11.40	20.63	0.870	0.11	7.48	-149.2	210	3.25	"
1455	12.05	20.74	0.872	0.11	7.46	-149.3	200	3.25	"
1500	12.70	20.74	0.872	0.11	7.47	-149.6	200	3.25	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

* discussed situation w/ D. Brown & decided to sample

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 65° Rain

Project Number: 389017.FI.FS.86
Well ID: IR86-MW42DW
Sample ID: IR86-GMW42DW-09D
Sampling Team: D. Brown / CLT

Total Depth: 96.83 FT.(BTOC)
Depth to water: (-) 2.95 FT.(BTOC)
Water Column: 93.88 FT.
(x) .163 GAL/FT.
Well Volume: 15.3 GAL.
Total Purge Vol.: 15.5 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 90' FT.(BTOC)

Water Quality Meter: YSI 556 S/N 04180
Depth to Water / Date and Time: 2.95 12/13 1330

5% Drawdown = 4.69 ft

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/13/09 Time: 1640	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.8	.589	.40	7.08	-130.7	6.9	3.60	Clear, No odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1350	0.8	17.2	.713	1.15	6.93	42	173	2.99	Clear, no odor
1400	1.6	17.3	.705	.89	6.97	31	121	3.15	
1410	2.6	17.5	.683	.75	6.99	21	75	3.17	
1420	3.5	17.6	.641	.64	7.00	-10	68	3.23	
1430	4.3	17.6	.627	.53	7.01	-34	71	3.29	
1440	4.9	17.9	.603	.41	7.03	-85	65	3.41	
1450	5.8	18.0	.599	.38	7.04	-115	39	3.43	
1500	7.0	18.2	.583	.32	7.06	-135	17	3.45	
1510	7.9	18.5	.595	.41	7.10	-121	15	3.49	
1520	8.9	18.7	.573	.49	7.09	-128	14	3.53	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 0.7 mg/L

Purge Start Time: 1340
Purge Rate: 0.3-0.4 L/min

Well was flooded when opened.
Cap was loose, Used trash pump to empty well area.
Initial water level reading might be surface influenced.

MS/MSD
Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 63° Rain

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW420W
Sample ID: IR86 - GW420W-09D
Sampling Team: D. Braun/CLT

Total Depth: FT.(BTOC)
Depth to water: (-) See FT.(BTOC)
Water Column: FT.
(x) Sheet GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
Purge Device: 1
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1530	9.7	18.7	.568	.43	7.08	-127.1	9.7	3.54	Clear, no odor
1540	10.5	18.7	.573	.40	7.07	-131.4	8.9	3.55	
1550	11.3	18.7	.591	.42	7.07	-127.3	9.2	3.55	
1600	12.2	18.7	.585	.41	7.08	-131.7	6.8	3.57	
1610	13.0	18.8	.590	.41	7.08	-130.2	5.9	3.59	
1620	13.9	18.8	.592	.40	7.08	-128.9	5.7	3.60	
1630	14.7	18.8	.587	.39	7.08	-131.3	6.3	3.60	
1640	15.5	18.8	.589	.40	7.08	-130.7	6.9	3.60	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate _____ mg/L
Nitrite _____ mg/L
Fe ___ mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

Page 1 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 50°, light rain

Project Number: 389017.FI.FS.86
Well ID: 1286-MW431W
Sample ID: 1286-GW431W-09D
Sampling Team: K. Tymrak / NWO

Total Depth: 49.31 FT.(BTOC)
Depth to water: 3.55 (-) ~~3.90~~ FT.(BTOC)
Water Column: 45.76 FT.
(x) 0.163 GAL/FT.
Well Volume: 7.46 GAL.
Total Purge Vol.: GAL.

Purge Device: Bladder Pump
Pump Inlet Depth 47' FT.(BTOC)

Water Quality Meter: YSI #14818, Hanna # 08988
Depth to Water / Date and Time: ~~3.90~~ 3.55' btoc 12/13/09 @ ~~1040~~ 1430

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/13/09 Time: 1640	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	21.10	0.684	0.19	8.33	-179.8	75.0	5.10	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1450	0.75	21.08	0.414	1.80	11.41	-37.7	360	~~5.2~~ 4.8	cloudy
1455	1.15	21.08	0.395	0.53	11.30	-25.9	340	4.9	"
1500	1.55	21.10	0.492	0.32	10.83	-9.8	330	4.9	"
1500	1.95	20.92	0.492	0.48	9.89	-11.1	170	4.85	"
1525	2.35	21.00	0.521	0.32	9.33	-4.9	160	4.90	"
1530	2.75	21.05	0.543	0.29	9.38	-2.7	150	4.90	"
1540	3.55	21.09	0.621	0.24	9.11	-115.1	160	4.95	clear
1550	4.35	21.13	0.685	0.22	8.93	-198.7	100	4.95	"
1600	5.15	21.12	0.668	0.20	8.73	-200.9	100	4.95	"
1610	5.95	21.13	0.682	0.19	8.51	-190.8	90.0	4.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1 ✓
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: 1440 Purge Rate: 0.3 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 0.7 mg/L

stopped @ 1500 to recalibrate pH meter - restarted at 1515

MS/MSD —
Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

Page 2 of 2

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	1286 - MW431W
Event:	Comprehensive Groundwater Sampling	Sample ID:	
Date:	12/13/09	Sampling Team:	K. Tymrak / NWO
Weather:			

Total Depth:		FT.(BTOC)	Water Quality Meter:	
Depth to water:	(-)	FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:		FT.		
	(x)	GAL/FT.		
Well Volume:		GAL.		
Total Purge Vol.:		GAL.		
Purge Device:				
Pump Inlet Depth		FT.(BTOC)		

see page 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1680	6.75	21.11	0.675	0.20	8.52	-194.6	80.0	5.10	clear
1685	7.15	21.11	0.684	0.21	8.41	-187.7	80.0	5.10	"
1690	7.55	21.10	0.687	0.20	8.32	-181.6	80.0	5.10	"
1695	7.95	21.10	0.686	0.20	8.33	-180.5	80.0	5.10	"
1640	8.35	21.10	0.684	0.19	8.33	-179.8	75.0	5.10	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	850 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: _____ Purge Rate: 0.3 L/min

Nitrate_____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	1286-MW44IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	1286-GW44IW-09D
Date:	12/12/09	Sampling Team:	K. Tymrak / NWO
Weather:	45°, cloudy		

Total Depth:	50.70	FT.(BTOC)	Water Quality Meter:	YSI #14218, Horiba #08988
Depth to water:	(-) 4.31	FT.(BTOC)	Depth to Water / Date and Time:	4.31 @ 1005 12/12/09
Water Column:	46.39	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	7.56	GAL.		
Total Purge Vol.:	9.30	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	48	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/12/09 Time: 1140	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.80	0.710	0.19	7.70	-152.6	220	4.65	Slightly Cloudy

* See page 2 for notes about sample

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1015	1.0	20.83	0.722	0.45	7.81	-157.3	260	4.65	Cloudy
1020	1.65	20.79	0.721	0.37	7.78	-156.1	290	4.67	Clear
1025	2.30	20.81	0.720	0.33	7.75	-154.4	220	4.70	Clear
1030	2.95	20.80	0.718	0.26	7.74	-153.6	190	4.70	"
1035	3.60	20.92	0.719	0.23	7.72	-153.6	170	4.70	"
1040	4.25	20.82	0.717	0.19	7.73	-153.0	150	4.70	"
1045	4.90	20.87	0.716	0.17	7.72	-152.4	140	4.73	"
1050	5.30	20.82	0.715	0.18	7.71	-151.4	135	4.65	"
1055	5.70	20.88	0.716	0.18	7.72	-151.3	130	4.65	"
1100	6.10	20.84	0.715	0.20	7.72	-153.1	250	4.65	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1005 Purge Rate: 0.5 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe^{2+} 2.8 mg/L

slowed to 0.3 L/min @ 1045 to reduce turbidity

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: 1886 - MW441W
Event: Comprehensive Groundwater Sampling
Sample ID:
Date: 12/12/09
Sampling Team: K. Tymrak/NAVO
Weather: 45, overcast

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1105	6.50	20.85	0.715	0.28	7.72	-150.8	220	4.65	slightly cloudy
1110	6.90	20.87	0.714	0.22	7.72	-150.9	210	4.65	"
1115	7.30	20.84	0.713	0.17	7.70	-150.8	220	4.65	"
1120	7.70	20.95	0.714	0.16	7.70	-151.3	220	4.65	"
1125	8.10	20.90	0.712	0.18	7.70	-150.7	220	4.65	"
1130	8.50	20.84	0.710	0.22	7.70	-149.5	220	4.65	"
1135	8.90	21.02	0.714	0.15	7.70	-152.5	210	4.65	"
* 1140	9.30	20.80	0.710	0.19	7.70	-152.6	220	4.65	"
~~1145~~	~~9.70~~								
~~1150~~	~~10.10~~								

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate: 0.3 L/min

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe

* discussed with D. Brown & decided to sample

MS/MSD – Duplicate ID No.: –

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 65° Rain

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW 44 DW
Sample ID: IR86 - GW44DW-09D
Sampling Team: D. Brown/CLT

Total Depth: 94.84 FT.(BTOC)
Depth to water: (-) 4.01 FT.(BTOC)
Water Column: 90.83 FT.
(x) .163 GAL/FT.
Well Volume: 14.8 GAL.
Total Purge Vol.: 15.95 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 90' FT.(BTOC)

Water Quality Meter: YSI 556 S/n 04180
Depth to Water / Date and Time: 4.01 ft. bgs 12/13/09 0930
90.83 * 0.05 = 4.54 ft

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

page 1 of 2

SAMPLE DATA

Date: 12/13/09 Time: 1200	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.2	.652	.18	6.75	-159	20	4.89	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0940	1.10	17.6	.651	.83	6.91	-30	475	4.53	Cloudy, no odor
0950	2.20	17.7	.683	.41	6.83	-105	321	4.68	
1000	3.30	17.8	.691	.35	6.85	-107	234	4.71	
1010	4.40	17.8	.703	.32	6.84	-121	255	4.73	
1020	5.50	17.8	.681	.21	6.85	-127	273	4.81	
1030	6.50	17.7	.685	.23	6.85	-129	179	4.83	
1040	7.55	17.9	.689	.20	6.80	-135	1.93	4.83	
1050	8.55	17.9	.657	.21	6.78	-138	185	4.83	
1100	9.65	17.8	.661	.20	6.79	-141	132	4.84	
1110	10.75	17.9	.653	.19	6.78	-148	81	4.85	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0930 Purge Rate: 0.4 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.2 mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 59° Rain

Project Number: 389017.FI.FS.86
Well ID: IR86-MW44DW
Sample ID: IR86-GW44DW-090
Sampling Team: D. Brown / CLT

Total Depth: See FT.(BTOC)
Depth to water: (-) See FT.(BTOC)
Water Column: FT.
(x) See GAL/FT.
Well Volume: GAL.
Total Purge Vol.: See GAL.
Purge Device: /
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See
Depth to Water / Date and Time: Sheet 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1120	11.90	18.0	.651	.18	6.78	-150	65	4.85	clear, no odor
1130	13.00	18.0	.658	.19	6.77	-155	38	4.87	
1135	13.55	18.1	.652	.19	6.77	-157	31	4.87	
1140	14.05	18.1	.655	.18	6.77	-152	28	4.87	
1145	14.60	18.1	.650	.18	6.76	-155	23	4.88	
1150	15.15	18.2	.648	.18	6.75	-159	21	4.89	
1155	15.60	18.2	.653	.17	6.75	-160	19	4.89	
1200	15.95	18.2	.652	.18	6.75	-159	20	4.89	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	SITE 86	Well ID:	IR86-MW45DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-MW45DW-10A
Date:	1/15/10	Sampling Team:	DB + MS
Weather:	SUNNY, 40's		

Total Depth:	95	FT.(BTOC)	Water Quality Meter:	YSI / HANNA
Depth to water:	(-) 83	FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:	12	FT.		
	(x) .163	GAL/FT.		
Well Volume:	1.956	GAL.		
Total Purge Vol.:	1.956	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	90	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		DMGK 7						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0935	.5	18.84	0.533	0.79	7.84	-205.3	25.1	2.80	
0940	.9	19.61	0.571	0.38	7.85	-225.6	36.4	2.80	
0945	1.5	19.60	.563	.31	7.81	-225.3	32.3	2.80	
0950	1.9	19.60	.542	.29	7.81	-220.6	35.7	2.80	
0955	2.8	19.83	0.601	0.22	7.82	-218.2	66.5	2.80	
1000	3.3	19.68	0.600	0.22	7.82	-214.6	54.7	2.80	
1005	3.8	19.73	0.599	0.20	7.82	-214.2	51.6	2.80	
1010	4.3	19.70	0.597	0.18	7.82	-211.7	44.9	2.80	
1015	4.8	19.65	0.596	0.17	7.81	-211.0	38.6	2.80	
1020	5.3	19.61	0.598	0.16	7.80	-210.8	32.3	2.80	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0930 Purge Rate: 300 ml/min

Nitrate_____ mg/L

Nitrite _____ mg/L

DMGK 7

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

2 of 2

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	SITE 86	Well ID:	I286-MW45DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	I286-GW45DW
Date:	1/15/10	Sampling Team:	DB + MS
Weather:	SUNNY, 50'S		

Total Depth:		FT.(BTOC)	Water Quality Meter:	
Depth to water:	(-)	FT.(BTOC)	Depth to Water / Date and Time:	PAGE 1
Water Column:		FT.		
	(x)	GAL/FT.		
Well Volume:		GAL.		
Total Purge Vol.:	PAGE	GAL.		
Purge Device:				
Pump Inlet Depth		FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/15/10 Time: 1038	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	19.90	0.601	0.17	7.79	-210.6	19.7	2.80	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1025	5.8	19.72	0.597	0.16	7.50	211.4	30.9	2.80	
1030	6.3	19.61	0.600	0.19	7.79	-211.9	25.2	2.80	
1035	6.8	19.77	0.601	0.18	7.79	-209.3	23.5	2.80	
1038	7.1	19.90	0.601	0.17	7.79	-210.6	19.7	2.80	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: PAGE 1 Purge Rate:

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe 1.0 mg/L

MS/MSD	Duplicate ID No.:
Signature(s):	

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/7/09
Weather: 50° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW46IW 09
Sample ID: ~~IR86-[redacted]46IW-09~~ IR86-GW46IW-09D
Sampling Team: D. Brown / CLT

Total Depth: 49.98 FT.(BTOC)
Depth to water: (-) 8.48 FT.(BTOC)
Water Column: ~~49.98~~ 41.5 FT.
(x) [redacted] .163 GAL/FT.
Well Volume: 6.76 GAL.
Total Purge Vol.: 9.4 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth: 45' FT.(BTOC)

Water Quality Meter: YSI 500 S/N 04180
Depth to Water / Date and Time: 12/7/09

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

41.5 * 0.05 = 2.1
~~49.98 - 2.1 = 47.88~~ DB
8.48 + 2.1 = 10.58

Sheet 1 of 2

SAMPLE DATA

Date: 12/7/09 Time: 1530	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	20.8	.414	.31	6.19	-45	6.3	9.03	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1410	0.7	21.5	.414	2.90	6.31	52	193	8.69	Cloudy, no odor
1415	1.2	21.4	.403	2.15	6.22	31	172	8.79	
1420	1.8	21.3	.421	2.10	6.25	27	151	8.99	
1425	2.4	21.3	.420	2.03	6.31	28	139	9.01	
1430	3.0	21.1	.431	1.73	6.21	13	128	9.01	
1435	3.6	21.1	.407	0.95	6.20	5	117	9.03	
1440	4.2	20.9	.417	0.73	6.23	-3	103	9.03	
1445	4.8	20.9	.418	0.60	6.22	-10	95	9.03	
1450	5.4	20.9	.410	0.52	6.21	-31	83	9.03	
1455	6.0	20.9	.411	0.31	6.20	-38	70	9.03	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1400 Purge Rate: 0.5 L/min

Nitrate 4.84 mg/L ~~4.4~~ DB
Nitrite 0.0 mg/L ~~3.3~~ DB
Fe = 1.3 mg/L

Nitrate = 1.1 * 4.4 = 4.84 mg/L
Nitrite = 0 * 3.3 = 0 mg/L

MS/MSD
Duplicate ID No.:
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date:
Weather: See

Project Number: 389017.FI.FS.86
Well ID: IA86-MW46IW See
Sample ID: Sheet 1
Sampling Team:

Total Depth: See FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: Sheet GAL.
Total Purge Vol.: GAL.

Purge Device: /

Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1500	6.6	20.9	.410	.30	6.18	-41	53	9.04	Clear, no odor
1505	7.2	20.9	.412	.29	6.18	-38	41	9.03	
1510	7.8	20.9	.410	.28	6.19	-42	21.7	9.04	
1515	8.2	20.8	.415	.29	6.20	-41	15.3	9.04	
1520	8.6	20.8	.413	.29	6.20	-45	12.7	9.04	
1525	9.0	20.8	.413	.31	6.19	-43	11.2	9.04	
1530	9.4	20.8	.414	.31	6.19	-45	6.3	9.04	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate_____ mg/L
Nitrite _____ mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: 1R86-MW47
Event: Comprehensive Groundwater Sampling
Sample ID: 1R86-GW47-09D
Date: 12/9/09
Sampling Team: K. Ramsey / CLT
Weather: 70°, Cloudy & Windy

Total Depth: 30.23 FT.(BTOC)
Water Quality Meter: YSI #06309
Depth to water: (-) 5.75 FT.(BTOC)
Depth to Water / Date and Time: 5.75 12/9/09 0900
Water Column: 24.48 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.99 GAL.
Total Purge Vol.: ~12 GAL.*
Purge Device: Bladder Pump
Pump Inlet Depth ~25 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	—	—	—	See	pg	2		

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0935	~0.5	23.42	0.172	2.16	5.56	32.5	197	6.30	milky / cloudy
0940	~0.75	23.51	0.187	0.79	5.52	2.0	216	6.30	milky / cloudy
0945	~1.0	23.53	0.179	0.71	5.50	-13.6	210	6.51	milky / cloudy
0950	~1.5	23.55	0.188	0.49	5.48	-19.3	181	6.49	milky / cloudy
0955	~1.75	23.52	0.187	0.40	5.47	-21.9	154	6.48	milky / cloudy
1000	~2.25	23.52	0.189	0.33	5.47	-33.3	133	6.54	milky / cloudy
1005	~2.5	23.36	0.187	0.31	5.47	-42.7	117	6.55	milky / cloudy
1010	~3.0	23.36	0.189	0.33	5.48	-57.0	94.3	6.53	milky / cloudy
1015	~3.5	23.39	0.187	0.32	5.47	-69.3	81.9	6.56	milky / cloudy
1020	~4 *	23.40	0.187	0.29	5.47	-77.0	70.6	6.49	milky / cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~1~~ 2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Purge Start Time: 0933
Purge Rate: ~0.3 L/min
0943 turned up to ~0.4 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.4 mg/L
* = observed purge vol. values

MS/MSD —
Duplicate ID No.: —
Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/9/09
Weather: 70°, Cloudy, Rain, Wind

Project Number: 389017.FI.FS.86
Well ID: IR86-MW47
Sample ID: IR86-GW47-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 30.23 FT.(BTOC)
Depth to water: (-) 5.75 FT.(BTOC)
Water Column: 24.48 FT.
(x) 0.163 GAL/FT.
Well Volume: 3.99 GAL.
Total Purge Vol.: ~12 GAL. *

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI #06309
Depth to Water / Date and Time: 5.75 12/9/09 0900

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/9/09 Time: 1100	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	23.39	0.189	0.21	5.46	-108.7	19.5	6.55	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1025	~4.5	23.44	0.188	0.28	5.46	-85.0	54.5	6.50	Cloudy
1030	~4.75	23.47	0.188	0.28	5.46	-90.7	46.6	6.51	Cloudy
1035	~6	23.52	0.188	0.26	5.46	-93.8	38.4	6.56	Clear
1040	~7	23.55	0.190	0.25	5.47	-98.3	35.6	6.56	Clear
1045	~8	23.49	0.189	0.22	5.46	-101.2	30.7	6.59	Clear
1050	~9	23.41	0.189	0.23	5.46	-104.1	21.8	6.60	Clear
1055	~10	23.37	0.188	0.22	5.46	-106.9	20.8	6.59	Clear
1100	~11	23.39	0.189	0.21	5.46	-108.7	19.5	6.55	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~3~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0933 Purge Rate: ~0.3 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.4 mg/L

0943 turned up to ~0.4 L/min
1029 turned pump up >0.4 L/min

Nitrate 0 x 4.4 = 0
Nitrite 0 x 3.3 = 0 mg/L

MS/MSD ——— Duplicate ID No.: ———
Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/9/09
Weather: 570, Cloudy, Rain

Project Number: 389017.FI.FS.86
Well ID: IR86-MW471W
Sample ID: IR86-GW471W-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 48.48 FT.(BTOC)
Depth to water: (-) 7.41 FT.(BTOC)
Water Column: 41.07 FT.
(x) 0.163 GAL/FT.
Well Volume: 6.69 GAL. x3= 20.08
Total Purge Vol.: <23 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~47 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 7.41 12/9/09 1225

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/9/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see	pg	2	—	—	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1225	NM	23.01	0.236	1.60	7.14	-71.6	19.5	7.41	Cloudy
1240	NM	22.48	0.214	0.45	7.23	-139.6	295	9.51	Cloudy
1245	~3	22.42	0.209	0.31	7.25	-151.3	314	9.73	Cloudy
1250	>3 1/4	22.46	0.208	0.36	7.24	-151.0	340	9.52	Cloudy
1255	>4	22.42	0.207	0.24	7.25	-156.4	295	9.51	Cloudy
1300	~4 1/2	22.43	0.223	0.21	7.26	-160.0	264	9.69	Cloudy
1310	>5 1/4	22.43	0.225	0.22	7.25	-161.2	245	9.80	Cloudy
1320	>6 3/4	22.41	0.207	0.21	7.25	-155.1	179	10.29	Cloudy
1330	~7 3/4	22.40	0.205	0.18	7.26	-160.6	158	10.41	Cloudy
1340	<9	22.37	0.218	0.18	7.21	-153.7	132	10.31	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1218 Purge Rate: ~0.36 L/min, increased after initial reading
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.6 mg/L

~1250 pump slowed to avoid drawdown ~0.4 L/min
1310 - switched to 3 well volume method b/c >5% drawdown, turn up pumping rate, readings every 10 min per D.B. ~0.5 L/min

MS/MSD (Yes) Duplicate ID No.:
Signature(s): Kelly A Ramsey

NM = Not measured

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86 - MW471W
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GMW471W-09D
Date:	12/9/09	Sampling Team:	K. Ramsey / CLT
Weather:	70°, Cloudy, Rain		

Total Depth:	48.48	FT.(BTOC)	Water Quality Meter:	YSI # 06309
Depth to water:	(-) 7.41	FT.(BTOC)	Depth to Water / Date and Time:	7.41 12/9/09 1225
Water Column:	41.07	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	6.69	GAL. x 3 = 20.08		
Total Purge Vol.:	<23	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~47	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/9/09 Time: 1520	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	22.31	0.201	0.26	7.24	-161.2	59.1	10.65	Cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1350	>10 1/4	22.35	0.219	0.19	7.22	-158.9	117	10.50	Cloudy
1400	>11 1/2	22.35	0.216	0.20	7.24	-161.1	92.1	10.58	Cloudy
1410	>12 1/2	22.34	0.216	0.19	7.25	-161.6	87.8	10.52	Cloudy
1420	~14	22.34	0.214	0.19	7.21	-158.6	81.3	10.45	Cloudy
1430	~15 1/4	22.34	0.213	0.19	7.21	-160.5	76.0	10.65	Cloudy
1440	~16 1/2	22.32	0.216	0.17	7.25	-160.0	76.3	10.61	Cloudy
1450	~17	22.33	0.202	0.18	7.24	-162.6	75.8	10.58	Cloudy
1500	>18 1/4	22.35	0.204	0.19	7.25	-161.7	70.7	10.60	Cloudy
1510	~19 1/2	22.32	0.199	0.34	7.22	-158.8	62.9	10.61	Cloudy
1520	>20	22.31	0.201	0.26	7.24	-161.2	59.1	10.65	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1213 Purge Rate: see pg 1

Nitrate 0 mg/L

Nitrite 0 mg/L

see pg 1

Fe 2.6 mg/L

MS/MSD YES Duplicate ID No.:

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86 - MW48
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86 - GW48 - 09D
Date:	12/13/09	Sampling Team:	K. Ramsey / CLT
Weather:	58°, Rain, Cloudy		

Total Depth:	30	FT.(BTOC)	Water Quality Meter:	YSI #556
Depth to water:	(-) 6.23	FT.(BTOC)	Depth to Water / Date and Time:	6.23 12/13/09 0950
Water Column:	23.77	FT.		
	0.163 (x)	GAL/FT.		
Well Volume:	3.8	GAL. x 3 = 11.6		
Total Purge Vol.:	~20	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~25	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 3

SAMPLE DATA

Date: 12/13/09 Time: 1257	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	pg 1	of	3	—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1005	<1/2	22.38	0.112	1.29	5.07	1.9	235	7.29	Cloudy / Lt Brown
1010	~3/4	22.90	0.109	0.58	5.05	-15.0	587	7.59	Cloudy / Lt Brown
1020	>1 3/4	23.18	0.106	0.29	5.02	-34.4	672	8.09	Cloudy / Lt Brown
1030	~3	23.19	0.100	0.23	5.02	-45.6	365	8.05	Cloudy / Lt Brown
1040	~4	23.02	0.102	0.21	5.01	-53.4	167	6.90	Cloudy
1050	>5 1/4	21.82	0.097	0.75	5.08	-17.7	65.8	*5.71	Cloudy
1100	>6 1/4	18.88	0.078	7.04	5.88	16.1	46.8	*6.09	Cloudy
1110	>7 1/4	19.13	0.077	7.26	6.11	16.9	40.0	6.79	Slightly Cloudy
1120	~8 3/4	19.68	0.080	6.91	5.93	20.5	38.1	7.46	Clear
1130	~10	20.74	0.087	5.32	5.60	32.0	32.4	7.84	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1000 Purge Rate: See below

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.8 mg/L

1005 Purge rate increase b/c <0.3 L/min (new rate ~0.35 L/min)

1014: Drawdown > 5%, switch to 3 well vol. method, increase flow rate to <0.5 L/min

* DTW difficult to determine – steady rain

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86- MW48
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86- GW48-09D
Date:	12/13/09	Sampling Team:	K. Ramsey / CLT
Weather:	58°, Rain, Cloudy		

Total Depth:	30	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 6.23	FT.(BTOC)	Depth to Water / Date and Time:	6.23 12/13/09 0950
Water Column:	23.77	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	3.8	GAL. x 3 = 11.6		
Total Purge Vol.:	~20	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~25	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 3

SAMPLE DATA

Date: 12/13/09 Time: 1257	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow			see pg 3					

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1140	~11 1/4	21.65	0.097	3.05	5.34	32.0	29.6	8.98	Clear
1150	~12	22.10	0.102	1.85	5.21	11.7	29.1	8.12	Clear
1200	~13	22.34	0.102	1.40	5.13	-13.7	24.4	8.10	Clear
1210	~14 1/4	22.54	0.103	1.12	5.09	-28.7	24.4	8.20	Clear
1219 ~~1220~~	>15 1/4	22.67	0.101	0.93	5.06	-34.1	22.1	8.21	Clear
1222	~15 3/4	22.68	0.103	0.89	5.06	-36.2	21.9	8.26	Clear
1225	~16	22.71	0.102	0.80	5.05	-39.3	21.3	8.11	Clear
1228	~16 1/4	22.73	0.101	0.69	5.04	-41.6	19.3	8.21	Clear
1245	~16 3/4	22.14	0.138	1.31	4.93	5.0	21.3	7.65	Clear
1248	~17	22.82	0.131	0.92	4.95	-7.0	14.7	7.98	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1000 Purge Rate: (see pg 1)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.8 mg/L

see pg 1 for notes

1229: stopped purge to recalibrate YSI for DO, ORP

1242: Purge re-started

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86 - MW48
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86 - GW48 - 09D
Date:	12/13/09	Sampling Team:	K Ramsey / CLT
Weather:	~ 60°, Rain, Cloudy		

Total Depth:	30	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 6.23	FT.(BTOC)	Depth to Water / Date and Time:	6.23 12/13/09 0950
Water Column:	23.77	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	3.8	GAL. x 3 = 11.6		
Total Purge Vol.:	~20	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~25	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 3 of 3

SAMPLE DATA

Date: 12/13/09 Time: 1257	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	22.90	0.130	0.55	4.98	-19.8	16.6	8.11	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1251	>17 1/4	22.88	0.130	0.59	4.98	-16.2	16.7	8.11	Clear
1254	>17 3/4	22.89	0.130	0.52	4.98	-18.9	17.0	8.04	Clear
1257	>18	22.90	0.130	0.55	4.98	-19.8	16.6	8.11	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1000 Purge Rate: (see pg 1)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.8 mg/L

see pg 1,2 notes

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	1R86-MW481W
Event:	Comprehensive Groundwater Sampling	Sample ID:	1R86-GW481W-09D
Date:	12/16/09	Sampling Team:	K. Ramsey / CLT
Weather:	45°, Clear		

Total Depth:	49.28	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 7.01	FT.(BTOC)	Depth to Water / Date and Time:	7.01 12/16/09 0913
Water Column:	42.27	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	6.89	GAL. x3 = 20.7		
Total Purge Vol.:	~10½	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~48	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/16/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	—	see	pg		—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0920	>½	21.44	0.177	0.73	9.28	-125.0	26.0	8.48	Clear
0925	~1¼	21.61	0.281	0.51	7.26	-169.8	58.2	8.71	Clear
0930	<2	21.47	0.372	0.72	6.98	-164.7	93.4	8.84	Clear
0935	~2½	21.37	0.315	0.47	6.97	-165.8	110	8.91	Clear
0940	<3	21.36	0.378	0.44	6.96	-166.2	125	8.72	Clear
0950	~3¾	21.41	0.367	0.32	6.94	-165.3	218	8.54	Clear
1000	>4½	21.47	0.400	0.27	6.95	-165.6	185	8.66	Clear
1010	>5½	21.47	0.408	0.24	6.94	-166.2	157	8.73	Clear
1020	~6½	21.65	0.315	0.21	6.95	-166.7	117	8.81	Clear
1030	~7½	21.57	0.374	0.20	6.94	-166.8	103	8.94	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
~~Metals by EPA Method 6010B~~	~~HNO_3~~	~~500 ml poly bottle~~	~~1~~
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~
Microbial			1
Fe, Mn	HNO3	250 ml poly	1

VOCs, NAPs, Microbial

Observations/Notes: Purge Start Time: 0915 Purge Rate: ~0.45 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 3.4 mg/L

0922 turned flow rate down to prevent drawdown, again at 0937 (new rate ~0.35 L/min)

MS/MSD —	Duplicate ID No.: —
Signature(s): Kelly A Ramsey	

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	1R86-MW-481W
Event:	Comprehensive Groundwater Sampling	Sample ID:	1R86-GW481W-09D
Date:	12/16/09	Sampling Team:	K. Ramsey / CLT
Weather:	45°, Clear		

Total Depth:	49.28	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 7.01	FT.(BTOC)	Depth to Water / Date and Time:	7.01 12/16/09 0913
Water Column:	42.27	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	6.89	GAL. x 3 = 20.7		
Total Purge Vol.:	~10 1/2	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~48	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/16/09 Time: 1045	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	21.72	0.386	0.18	6.93	-167.4	78.0	8.97	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1033	>7 1/2	21.69	0.361	0.20	6.93	-166.8	89.0	8.93	Clear
1036	>7 3/4	21.75	0.367	0.19	6.93	-166.8	86.8	8.94	Clear
1039	~8 1/2	21.76	0.400	0.19	6.94	-167.0	87.3	8.92	Clear
1042	<8 3/4	21.79	0.368	0.17	6.94	-167.1	77.9	8.95	Clear
1045	<9	21.72	0.386	0.18	6.93	-167.4	78.0	8.97	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
~~Metals by EPA Method 6010B~~	~~HNO_3~~	~~500 ml poly bottle~~	~~1~~
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~
Microbial			1
Fe, Mn	HNO_3	250 mL poly	1

VOC, NAIPs, Microbial

Observations/Notes: Purge Start Time: 0915 Purge Rate: ~0.45 L/min
turned down to ~0.35 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 3.4 mg/L

(see pg 1 notes)

D. Brown gives approval to sample at 1045

MS/MSD —	Duplicate ID No.: —
Signature(s): Kelley A Ramsey	

CH2MHILL

Lof 2

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW39-49DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-~~MW39-049D~~ GW49DW-09D
Date:	~~12/15/09~~ 12/17/09	Sampling Team:	M. SM. FH / RDU
Weather:	~~MCLOUDY, 50'S~~ SUNNY, 30'S		

Total Depth:	~~29.94~~	FT.(BTOC) 95.00	Water Quality Meter:	YSI / 1400G
Depth to water:	(-) 6.60	FT.(BTOC)	Depth to Water / Date and Time:	6.60 12/17/09 0930
Water Column:	88.40	FT.		
	(x) .163	GAL/FT.		
Well Volume:	14.4	GAL. x3		
Total Purge Vol.:	43.2	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	92.5	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	PAGE 2							

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0940	0.2	20.07	0.649	4.46	7.84	182.0	17.0	7.80	
0950	0.75	21.52	0.603	0.73	7.75	-137.0	160	10.00	
1000	1.75	21.40	0.596	0.39	7.75	-150.3	23.0	11.25	
1015	4.5	21.26	0.595	0.25	7.76	-137.9	11.0	11.75	
1025	7.0	19.53	0.585	0.81	7.74	-124.0	9.30	17.50	
1035	9.0	19.67	0.585	0.52	7.75	-98.0	10.0	20.0	
1045	11.25	19.68	0.580	0.30	7.75	-117.9	10.0	20.10	
1055	13.5	19.44	~~0.581~~ 0.584	0.22	7.75	-114.7	10.0	20.35	
1105	15.75	19.33	0.587	0.22	7.77	-113.5	10.0	20.55	
1115	18.00	20.00	0.585	0.18	7.63	-110.2	10.0	20.95	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2/1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0930 Purge Rate: 300 ml/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe2+ _____ mg/L

DUE TO DRAWDOWN WILL PURGE 3 VOLS.

MICROBIAL SAMPLE

MS/MSD — Duplicate ID No.: —

Signature(s):

CH2MHILL

2of2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: SUNNY, 30's

Project Number: 389017.FI.FS.86
Well ID: IR86-MW49DW
Sample ID: IR86-GW49DW-090
Sampling Team: M.S./RPU

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
Purge Device:
Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time: PAGE 1

PAGE

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/17/09 Time: 1241	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	20.59	0.582	0.15	7.78	-97.1	1.20	27.0	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1125	20.25	20.14	0.586	0.17	7.78	-112.2	10.0	21.10	
1135	22.50	20.42	0.585	0.17	7.77	-110.3	10.0	21.30	
1145	24.75	20.12	0.584	0.16	7.76	-107.3	10.0	21.45	
1150	26.50	20.53	0.584	0.43	7.78	-102.2	10.0	21.62	
1200	29.00	20.56	0.582	0.48	7.79	-99.0	10.0	21.85	
1210	30.00	20.82	0.585	0.23	7.91	-74.5	10.0	22.95	
1220	35.0	20.81	0.581	0.53	7.82	-87.4	3.90	24.50	
1230	40.0	20.61	0.580	0.22	7.78	-93.2	3.90	25.60	
1235	42.5	20.67	0.581	0.18	7.77	-95.6	3.90	26.05	
1238	45.0	20.81	0.582	0.17	7.78	-96.7	1.80	26.50	
1241	46.0	20.59	0.582	0.15	7.78	-97.1	1.20	27.00	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0930 Purge Rate: <6.7 GPM
Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe^{2+} 0.0 mg/L

MS/MSD — Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	SITE 86	Well ID:	IR86-MW51DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW51DW
Date:	1/15/10	Sampling Team:	DB + MS
Weather:	SUNNY 60'S		

Total Depth:	95	FT.(BTOC)	Water Quality Meter:	YSI / HANNA
Depth to water:	(-) 76	FT.(BTOC)	Depth to Water / Date and Time:	5.74 1/15/10 1230
Water Column:	14	FT.		
	(x) .163	GAL/FT.		
Well Volume:	2.28	GAL. x 1		
Total Purge Vol.:	5.9 ~~2.28~~	GAL. DB		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth		FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/15/10 Time: 1345	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	19.77	1.019	.18	7.50	-204.9	27.2	5.75	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1240	.4	20.32	1.062	7.32	7.54	-225.9	48.9	5.75	
1245	.7	20.25	1.151	0.45	7.54	-223.4	31.2	5.75	
1250	1.3	20.11	1.159	0.38	7.53	-214.9	35.1	5.75	
1255	1.7	20.11	1.140	0.33	7.52	-212.2	39.2	5.75	
1300	2.2	20.10	1.111	0.27	7.52	-209.3	40.5	5.75	
1305	2.6	20.05	1.101	0.25	7.52	-205.7	42.7	5.75	
1310	3.1	20.05	1.091	0.23	7.51	-201.2	47.1	5.75	
1315	3.5	19.98	1.089	0.22	7.50	-201.6	50.0	5.75	
1320	3.9	19.93	1.082	0.20	7.50	-199.3	46.0	5.75	
1325	4.3	19.82	1.074	0.8	7.51	-202.5	40.2	5.75	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1235 Purge Rate: 300 ml/m

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe^{2+} 0.0 mg/L

MS/MSD

Duplicate ID No.: IR86-GW51DW-D-10A

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: SITE 86
Event: Comprehensive Groundwater Sampling
Date: 1/15/10
Weather:

Project Number: 389017.FI.FS.86
Well ID: IR86-MW51DW
Sample ID: IR86-GW51DW-10A
Sampling Team: DB + MS

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
Purge Device:
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: YSI / HANNA
Depth to Water / Date and Time: PAGE 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/15/10 Time: 1345	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	19.77	1.019	.18	7.50	-204.9	27.2	5.75	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1330	4.7	19.77	1.065	0.18	7.51	-203.3	32.3	5.75	
1335	5.1	19.77	1.021	.18	7.50	-204.1	31.2	5.75	
1340	5.5	19.77	1.017	.17	7.50	-204.1	28.3	5.75	
1345	5.9	19.77	1.019	.18	7.50	-204.9	27.2	5.75	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2+ 0.6 mg/L

MS/MSD
Duplicate ID No.: IR86-GW51DW-D-10A
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MWS2
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GWS2-09D
Date:	12/9/09	Sampling Team:	D. Brown / CLT
Weather:	73° T-Storms		

Total Depth: 29.38 FT.(BTOC)
Depth to water: (-) 4.08 FT.(BTOC)
Water Column: 19.3 FT.
(x) .163 GAL/FT.
Well Volume: 3.15 GAL.
Total Purge Vol.: 9.5 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 25 FT.(BTOC)

Water Quality Meter: YSI 500 s/n 04180
Depth to Water / Date and Time: ~~Water level meter~~ Heron oil/water Interface probe
5% * 19.3 = 0.95
19.3 + 0.95 = 20.25

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 1 of 2

SAMPLE DATA

Date: 12/9/09 Time: 1100	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: 3 well Vol	21.2	.439	3.91	6.10	15	23	4.78	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0920	1.1	21.1	.375	3.95	5.93	28	312	4.98	Dark grey, petrol odor
0925	1.50	21.0	.405	3.07	5.84	15	483	5.05	
0930	1.85	20.3	.472	3.39	5.99	12	475	4.81	
0935	2.20	20.7	.483	3.84	6.13	5	382	4.82	
0940	2.75	20.9	.415	3.81	6.15	15	412	4.80	
0945	3.05	20.8	.423	3.78	6.16	10	343	4.80	
0950	3.35	20.8	.417	3.61	6.10	17	382	4.77	
0955	4.05	20.7	.403	3.65	6.11	3	415	4.76	
1000	4.85	20.7	.409	3.43	6.11	19	403	4.76	
1015	5.90	20.7	.410	3.49	6.11	15	381	4.77	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0910 Purge Rate: 0.5 L/min
Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe 1.1 mg/L

Slowed pump rate @ 0920 0.3 L/min @ 0925 to try to avoid drawdown problem. Pumped 3 well Vols before turbidity dropped

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MWS2
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GWS2
Date:	12/9/09	Sampling Team:	D. Brown / CLT
Weather:	74° T-storms		

Total Depth:		FT.(BTOC)	Water Quality Meter:	Heron
Depth to water:	(-) See	FT.(BTOC)	Depth to Water / Date and Time:	Heron Oil water interface Probe
Water Column:		FT.		
	(x)	GAL/FT.		
Well Volume:		GAL.		
Total Purge Vol.:	Sheet 1	GAL.		
Purge Device:				
Pump Inlet Depth		FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1025	6.55	21.0	.430	3.95	6.09	21	431	4.78	Cloudy grey Petrol odor
1035	7.80	21.1	.433	3.91	6.10	15	103	4.78	Clear, no odor
1045	8.45	21.2	.438	3.92	6.10	17	65	4.78	↓
1050	8.80	21.2	.435	3.90	6.09	13	43	4.78	↓
1055	9.20	21.2	.438	3.91	6.09	18	31	4.78	↓
1100	9.50	21.2	.439	3.91	6.10	15	23	4.78	↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW52IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW52IW-10A
Date:	3/17/2010	Sampling Team:	D. Brown / C. LT
Weather:	65° Sunny		

Total Depth:	49.73 FT.(BTOC)	Water Quality Meter:	YSI S/N 05930
Depth to water:	(-) 4.83 FT.(BTOC)	Depth to Water / Date and Time:	4.83 3/17/10 1200
Water Column:	44.9 FT. x .05 = 2.24		
	(x) .163 GAL/FT.		
Well Volume:	7.31 GAL.		
Total Purge Vol.:	7.35 GAL.		
Purge Device:	Bladder Pump		
Pump Inlet Depth	45' FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 3/17/10 Time: 1340	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	19.8	.826	.82	8.12	162.2	7.2	5.06	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1210	0.75	20.1	1.10	1.45	8.45	195.2	132	4.91	Clear, no odor
1220	1.5	19.8	.832	1.31	8.47	199.7	101	4.99	
1225	1.9	19.4	.835	1.36	8.13	196.1	75.2	5.03	
1230	2.25	19.6	.715	1.30	8.22	183.2	73.1	5.03	
1235	2.50	19.6	.828	1.24	8.15	181.7	51.2		
1240	2.90	19.7	.831	1.15	8.15	180.7	37.4		
1245	3.30	19.7	.834	1.07	8.17	177.2	25.5		
1250	3.75	19.8	.831	1.01	8.17	179.1	29.7		
1255	4.10	19.8	.830	1.02	8.16	177.3	30.1		
1300	4.50	19.8	.831	1.01	8.15	176.1	22.3	5.05	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK-175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	~~H_2SO_4~~	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	HNO_3	~~250 ml poly bottle~~	~~1~~

Observations/Notes: Purge Start Time: 1200 Purge Rate: 0.3-0.4 L/min

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD Duplicate ID No.: IR86-GW52IWD-10A

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 3/17/10
Weather: 60° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW52IW
Sample ID: IR86-GW52IW-00A
Sampling Team:

Total Depth: See FT.(BTOC)
Depth to water: (-) See FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: Sheet GAL.
Total Purge Vol.: GAL.

Purge Device: 1

Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1305	4.85	19.8	.835	.93	8.10	165.1	16.2	5.06	Clear, No odor
1310	5.25	19.8	.821	.81	8.13	165.2	15.3		
1315	5.50	19.9	.827	.85	8.12	163.1	8.7		
1320	5.85	19.9	.822	.86	8.12	164.2	7.9		
1325	6.15	19.9	.825	.81	8.13	160.3	9.8		
1330	6.50	19.8	.825	.83	8.13	161.4	7.6		
1335	6.95	19.8	.827	.79	8.13	161.3	6.1		
1340	7.35	19.8	.826	.82	8.12	162.2	7.2		

Analysis	Preservative	Container requirements	No. of containers
TCL ~~VOCs by EPA Method 8260B~~	Hcl	~~40 ml glass vials~~	3
Methane, Ethane, Ethene ~~RSK-175~~	HCL	~~40 ml glass vials~~	2
Sulfide ~~376.2~~	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	~~500 ml poly bottle~~	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	~~250 ml poly bottle~~	2
Iron ~~and Manganese~~ by EPA Method 6010B	~~HNO_3~~	250 ml poly bottle	1
VOCS	HCl	40 ml VOA	3

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate _____ mg/L
Nitrite _____ mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/8/07
Weather: 50°, cloudy & breezy

Project Number: 389017.FI.FS.86
Well ID: 1286-MW53
Sample ID: 1286-GW53-09D
Sampling Team: K. Tymrak/MWD

Water Quality Meter: YSI # 04180, Hanna 98703
Depth to Water / Date and Time:

Total Depth: 30 FT.(BTOC)
Depth to water: (-) 4.666 FT.(BTOC)
Water Column: 25.33 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.53 GAL.
Total Purge Vol.: 8 GAL.

Purge Device: Bladder pump

Pump Inlet Depth 25 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/8/09 Time: 1525	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	21.36	0.565	0.22	8.09	-196.9	8.7	12.87	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1315	0.1	19.10	0.765	22.72	11.37	-166.1	170	6.08	clear
1320	1.0	20.71	0.761	0.91	11.32	-173.5	163	8.39	clear
1325	1.75	22.11	0.758	0.62	11.29	-198.7	50.0	9.51	clear
1330	2.0	22.18	0.574	1.47	11.09	-165.4	55.0	10.53	clear
1335	2.25	22.01	0.527	1.61	10.93	-150.4	60.0	11.55	clear
1340	2.5	22.11	0.517	1.43	10.79	-152.0	50.0	12.85	clear
* 1435	3.75	21.90	0.474	0.41	9.75	-142.7	25.0	11.15	clear
1450 ~~1440~~	5.0	21.35	0.524	0.39	9.17	-183.4	25.0	12.15	clear
1455	5.75	21.51	0.575	0.23	8.35	-207.8	30.0	12.75	clear
1500	6.25	21.60	0.578	0.21	8.14	-202.2	19.0	12.80	clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe = 1.2 mg/L

Purge Start Time: 1305

Purge Rate: 0.34 L/min
slowed to 0.30 L/min -

* had to stop reading at 1345 to allow aircraft to move w/o blowing loose equipment around - continued pumping until 1450
→ recalibrated pH meter b/c readings were high - restarted @ 1425

MS/MSD —
Duplicate ID No. —
Signature(s): [signature]

1450 - verified high pH reading with K. Ramsey's YSI

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/8/09
Weather: 50, overcast, windy

Project Number: 389017.FI.FS.86
Well ID: 1286 - MW53
Sample ID: 1286 - GW53 - 09D
Sampling Team: K. Tymrak

Total Depth: _____ FT.(BTOC)
Depth to water: (-) _____ FT.(BTOC)
Water Column: _____ FT.
(x) _____ GAL/FT.
Well Volume: _____ GAL.
Total Purge Vol.: _____ GAL.

see other sheet

Water Quality Meter: _____
Depth to Water / Date and Time: _____

Purge Device: _____

Pump Inlet Depth _____ FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1505	6.5	21.40	0.571	0.23	7.99	-187.0	15.0	12.81	clear
1510	7.0	21.45	0.569	0.24	8.14	-195.3	13.0	12.85	clear
1515	7.5	21.41	0.568	0.23	8.05	-196.1	10.0	12.86	clear
1520	8.0	21.36	0.565	0.22	8.09	~~-197.0~~ -196.9	8.7	12.87	clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate 0 mg/L
Nitrite 0 mg/L
FE 1.2 mg/L

MS/MSD | Duplicate ID No.:

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MWS3IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GWS3IW-10A
Date:	3/16/10	Sampling Team:	D. Brown/CLT
Weather:	55° Cloudy		
Total Depth:	49.71 FT.(BTOC)	Water Quality Meter:	YSI S/N 05930
Depth to water:	(-) 5.03 FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:	44.68 FT.		
	(x) .163 GAL/FT.		
Well Volume:	7.28 GAL.		
Total Purge Vol.:	7.45 GAL.		
Purge Device:	Bladder Pump		
Pump Inlet Depth	45' FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 3/16/10 Time: 1835	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	19.1	.701	.23	6.90	10	7.1	5.14	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1700	0.35	19.3	.810	1.35	6.91	93	312	5.07	Cloudy, no odor
1705	0.75	19.2	.703	1.21	6.82	81	204	5.12	↓
1710	1.10	19.1	.685	1.18	6.87	80	132	5.13	↓
1715	1.40	19.0	.697	1.07	6.87	73	76	5.13	↓
1720	1.75	19.2	.699	1.13	6.85	65	70		Clear, no odor
1725	2.10	19.2	.700	1.10	6.85	41	62		↓
1730	2.45	19.2	.701	0.71	6.85	23	51		↓
1735	2.80	19.3	.701	0.68	6.85	20	44		↓
1740	3.15	19.0	.683	.51	6.84	17	37		↓
1745	3.50	19.1	.687	.50	6.84	22	35		↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK-175~~	HCL	40 ml glass vials	2
~~Sulfide 376.2~~	NaOH	500 ml poly bottle	1
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	None	500 ml poly bottle	1
~~Total Organic Carbon by EPA Method 415.2~~	H_2SO_4	250 ml poly bottle	2
~~Iron and Manganese by EPA Method 6010B~~	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1655 Purge Rate: 0.3 L/min

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD IR86-GWS3IW-10A-MS IR86-GWS3IW-10A-SD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW53IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW53IW-10A
Date:	3/16/10	Sampling Team:	D. Brown/CLT
Weather:	55° Cloudy		
Total Depth:	49.71 FT.(BTOC)	Water Quality Meter:	YSI S/n 05930
Depth to water:	(-) 5.03 FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:	44.68 FT.		
	(x) .163 GAL/FT.		
Well Volume:	7.28 GAL.		
Total Purge Vol.:	7.45 GAL.		
Purge Device:	Bladder Pump		
Pump Inlet Depth	45' FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1750	3.95	19.2	.681	.49	6.91	13	31	5.14	clear, no odor
1755	4.30	19.1	.713	.31	6.87	15	21	5.14	
1800	4.75	19.0	.703	.27	6.88	10	17	5.14	
1805	5.10	19.0	.698	.25	6.89	7	15		
1810	5.50	19.0	.699	.25	6.89	5	8.3		
1815	5.90	19.0	.697	.24	6.90	-2	7.2		
1820	6.40	19.1	.699	.23	6.90	3	11.1		
1825	6.75	19.1	.700	.23	6.90	8	6.1		
1830	7.10	19.1	.701	.23	6.89	6	5.3		
1835	7.45	19.1	.701	.23	6.90	10	7.1		

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK-175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	H_2SO_4	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	HNO_3	~~250 ml poly bottle~~	~~1~~

Observations/Notes: Purge Start Time: 1655 Purge Rate: 0.3-0.4 L/min

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	~~MW~~ 1R86-MW541W
Event:	Comprehensive Groundwater Sampling	Sample ID:	1R86-GW541W-09D
Date:	12/14/09	Sampling Team:	K. Ramsey / CLT
Weather:	60°, Foggy		

Total Depth:	45	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 2.99	FT.(BTOC)	Depth to Water / Date and Time:	2.99 12/14/09 0845
Water Column:	42.01	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	6.8	GAL. x3 = 20.5		
Total Purge Vol.:	~15 3/4	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~43	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/14/09 Time: 1053	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see	pg	2	—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0855	~1/2	20.69	0.233	3.18	7.00	-123.4	539	2.91	Cloudy
0900	~1	20.92	0.248	3.35	7.05	-117.1	'L Lo'	2.99	Cloudy
0910	~2 1/4	20.96	0.269	2.73	7.04	-122.4	959	3.05	Cloudy
0920	>3 1/2	20.99	0.211	2.50	7.04	-127.0	228	3.20	Cloudy
0930	>4 1/2	20.98	0.235	2.13	7.03	-130.6	103	3.16	Cloudy
0940	~5 3/4	20.96	0.214	2.41	7.03	-130.6	81.6	3.19	Cloudy
0950	<7	20.98	0.211	2.30	7.03	-130.1	76.3	3.26	Cloudy
1000	~8	20.94	0.199	2.33	7.02	-130.1	72.3	3.31	Cloudy
1010	>9	20.99	0.199	2.27	7.02	-130.5	59.6	3.29	Cloudy
1020	>10 1/4	21.01	0.213	2.42	7.02	-130.2	54.5	3.35	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0848 Purge Rate: (see below)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.6 mg/L

Purge rate turned up at 0852 (initial flow rate <0.25 L/min) New purge rate ~ >0.35 L/min.

'L Lo' = Not enough light. Turbidity >1000 NTU

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW541W
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW541W-09D
Date:	12/14/09	Sampling Team:	K. Ramsey / CLT
Weather:	60°, Foggy		

Total Depth:	45	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 2.99	FT.(BTOC)	Depth to Water / Date and Time:	2.99 12/14/09 0845
Water Column:	42.01	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	6.8	GAL. x 3 = 20.5		
Total Purge Vol.:	~15 3/4	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~43	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/14/09 Time: 1053	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	21.03	0.205	2.43	7.01	-129.7	47.4	3.28	Cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1030	~11 1/2	20.99	0.206	2.35	7.01	-130.8	52.7	3.31	Cloudy
1040	~12 1/2	20.04	0.214	2.39	7.01	-129.7	50.1	3.28	Cloudy
1045	~13 1/4	21.04	0.203	2.32	7.01	-130.6	42.7	3.28	Cloudy
1050	>13 3/4	21.05	0.200	2.46	7.01	-130.3	45.6	3.28	Cloudy
1053	>14	21.03	0.205	2.43	7.01	-129.7	47.4	3.28	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0848 Purge Rate: (see pg 1)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.6 mg/L

See notes on pg 1

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 50°, rain

Project Number: 389017.FI.FS.86
Well ID: 1286 - MW551W
Sample ID: 1286 - GW551W-09D
Sampling Team: K. Tymrak/NWO

Total Depth: 43.68 FT.(BTOC)
Depth to water: (-) 6.80 FT.(BTOC)
Water Column: 36.88 FT.
(x) 0.163 GAL/FT.
Well Volume: 6.01 GAL.
Total Purge Vol.: 10.1 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 41 FT.(BTOC)

Water Quality Meter: YSI #14218, Hanna #08988
Depth to Water / Date and Time: 6.80' btoc, 12/13/09 @ 1120

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/13/09 Time: 1330	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	21.55	1.030	0.13	7.89	105.4	>1000	6.95	cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1135	0.9	21.67	1.058	1.00	7.18	-113.7	OR*	6.90	very cloudy
1140	1.3	21.63	1.051	0.37	7.24	-113.2	OR*	6.95	"
1145	1.7	21.51	1.048	0.26	7.35	-112.3	OR*	6.95	"
1150	2.1	21.45	1.044	0.21	7.37	-111.5	OR*	6.95	"
1200	2.9	21.48	1.040	0.20	7.41	-109.1	OR*	6.95	"
1210	3.7	21.49	1.038	0.15	7.49	-107.4	OR*	6.95	"
1220	4.5	21.51	1.039	0.15	7.56	-106.0	OR*	6.95	"
1230	5.3	21.51	1.039	0.16	7.68	-103.0	OR*	6.95	"
1240	6.1	21.55	1.039	0.18	7.74	-105.4	OR*	6.95	"
1250	6.9	21.60	1.036	0.19	7.84	-106.2	OR*	6.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
~~Metals by~~ EPA Method 6010B Fe and Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: 1125 Purge Rate: 0.3 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 3.2 mg/L

OR* = out of range

MS/MSD –
Duplicate ID No.: 1286-GW551WD-09D @ 1335
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1886-MW55LW
Sample ID:
Sampling Team: K. Tymrak

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1300	7.7	21.50	1.033	0.14	7.94	-107.0	OR*	6.95	cloudy
1305	8.1	21.47	1.031	0.13	7.91	-105.7	OR*	6.95	"
1310	8.5	21.50	1.033	0.14	7.90	-105.6	OR*	6.95	"
1315	8.9	21.54	1.032	0.13	7.90	-105.9	OR*	6.90	"
1320	9.3	21.53	1.033	0.12	7.90	-106.0	OR*	6.95	"
1325	9.7	21.54	1.032	0.12	7.90	-105.5	OR*	6.95	"
1330	10.1	21.55	1.030	0.13	7.89	-105.4	OR*	6.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes:
Nitrate_____ mg/L
Nitrite_____ mg/L
Fe

Purge Start Time:

Purge Rate: 0.3 L/min

OR* = out of range

MS/MSD —

Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site B16	Well ID:	IR86-MW56
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW56-09D
Date:	12/16/09	Sampling Team:	K. Ramsey / CLT
Weather:	50°, Clear		

Total Depth:	35	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 6.11	FT.(BTOC)	Depth to Water / Date and Time:	6.11 12/16/09 1330
Water Column:	28.89	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	4.71	GAL. x3 = 14.13		
Total Purge Vol.:	~12	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~30	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/16/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1335	<1/2	20.92	0.251	9.96	6.43	-76.4	'LLo'	6.32	cloudy
1340	~1/2	21.41	0.681	1.00	6.26	-97.0	732	6.21	cloudy
1350	~1 1/4	21.50	0.704	0.58	6.26	-107.1	288	6.29	Cloudy
1400	>2	21.39	0.748	0.38	6.32	-115.7	125	6.26	cloudy
1410	>3	21.30	0.748	0.29	6.36	-119.4	79.6	6.31	cloudy
1420	~4 1/2	21.37	0.734	0.25	6.38	-121.0	60.4	6.21	cloudy
1430	~5 1/4	21.31	0.723	0.24	6.40	-121.7	40.3	6.34	clear
1440	~6	20.72	0.710	1.20	6.34	-74.0	35.1	6.29	Clear
1450	~7	21.05	0.709	0.38	6.40	-91.0	27.0	6.25	clear
1455	~7 1/2	21.08	0.705	0.30	6.41	-93.6	23.0	6.25	clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1331 Purge Rate: <0.35 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 3.6 mg/L

'LLo' = Turbidity >1000 NTU

1434 stopped purge to switch YSI b/c suspect earlier values.

1436 purge re-started.

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW56
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW56-09D
Date:	12/16/09	Sampling Team:	K. Ramsey / CLT
Weather:	50°, clear		

Total Depth:	35	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 6.11	FT.(BTOC)	Depth to Water / Date and Time:	6.11 12/16/09 1330
Water Column:	28.89	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	4.71	GAL. x 3 = 14.13		
Total Purge Vol.:	~12	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~30	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/16/09 Time: 1511	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	21.08	0.694	0.23	6.42	-100.2	19.2	6.31	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1500	~8	21.14	0.703	0.30	6.41	-96.1	22.8	6.31	Clear
1505	<8 1/2	21.11	0.697	0.25	6.42	-98.3	18.7	6.21	Clear
1508	~9	21.14	0.697	0.24	6.41	-98.8	19.3	6.31	Clear
1511	>9	21.08	0.694	0.23	6.42	-100.2	19.2	6.31	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1331 Purge Rate: < 0.35 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 3.6 mg/L

See notes on pg 1

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 3/16/10
Weather: 55° Cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW56
Sample ID: IR86-GW56-10A
Sampling Team: D. Brown / CLT

Total Depth: 35.0 FT.(BTOC)
Depth to water: (-) 5.45 FT.(BTOC)
Water Column: 29.55 FT.
(x) .163 GAL/FT.
Well Volume: 4.81 GAL.
Total Purge Vol.: 5.15 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 30' FT.(BTOC)

Water Quality Meter: YSI S/n 05930
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 3/16/10 Time: 1600	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	20.1	.778	.32	5.92	32	8	5.59	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1455	.35	20.1	.735	1.35	5.91	74	347	5.48	Cloudy/Black, no odor
1500	.75	20.0	.813	1.21	5.87	70	303	5.49	Cloudy/grey, no odor
1505	1.10	19.9	.801	1.00	5.85	61	255	5.51	grey, cloudy, no odor
1510	1.55	19.7	.800	.53	5.86	41	273	5.53	Cloudy, grey, no odor
1515	1.90	19.9	.710	.44	5.89	43	212	5.55	Cloudy, grey, no odor
1520	2.35	20.0	.774	.41	5.92	37	135	5.55	Clear, no odor
1525	2.95	20.0	.772	.40	5.91	41	103	5.55	Clear, no odor
1530	3.15	20.1	.770	.43	5.91	38	97	5.56	↓
1535	3.45	20.2	.773	.38	5.91	42	39	5.56	↓
1540	3.80	20.2	.777	.31	5.93	40	33	5.57	✓

Analysis	Preservative	Container requirements	No. of containers
~~TCL VOCs by EPA Method 8260B~~	~~Hcl~~	~~40 ml glass vials~~	~~3~~
~~Methane, Ethane, Ethene RSK-175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	~~H_2SO_4~~	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	~~HNO_3~~	~~250 ml poly bottle~~	~~1~~
Mercury Method 7470A	HNO_3	500 ml Poly	1

Observations/Notes: Purge Start Time: 1450 Purge Rate: 0.3 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

MS/MSD will be taken from this sample

MS/MSD Duplicate ID No.:

Signature(s): David Brown

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW56
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW56-10A
Date:	3/16/10	Sampling Team:	D. Brown/CLT
Weather:	50° Cloudy		

Total Depth:	35	FT.(BTOC)	Water Quality Meter:	YSI S/n 05930
Depth to water:	(-) 5.45	FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:	29.55	FT.		
	(x) .163	GAL/FT.		
Well Volume:	4.81	GAL.		
Total Purge Vol.:	5.15	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	30'	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1545	4.15	20.2	.775	.33	5.93	37	21	5.58	Clear, no odor
1550	4.45	20.1	.773	.30	5.92	32	17	5.58	↓
1555	4.80	20.1	.771	.31	5.92	35	13	5.58	↓
1600	5.15	20.1	.778	.32	5.92	32	8	5.59	↓

Analysis	Preservative	Container requirements	No. of containers
~~TCL VOCs by EPA Method 8260B~~	~~HCl~~	~~40 ml glass vials~~	~~3~~
~~Methane, Ethane, Ethene RSK-175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	~~H_2SO_4~~	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	~~HNO_3~~	~~250 ml poly bottle~~	~~1~~
Mercury Method 7470A	HNO_3	500 ml Poly	1

Observations/Notes: Purge Start Time: 1450 Purge Rate: 0.3 L/min

Nitrate_____ mg/L

Nitrite _____ mg/L

MS/MSD will be taken from this sample

MS/MSD	Duplicate ID No.:
Signature(s): [signature]	

CH2MHILL

page 1 of 2

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	SITE 86	Well ID:	FS86-MW56DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	FS86-GW56DW-10A
Date:	1/14/10	Sampling Team:	DB, GL, MS
Weather:	SUNNY 50'S		

Total Depth:	90	FT.(BTOC)	80-90 SCREEN	Water Quality Meter: YSI / 11871 HANNA / 040018
Depth to water:	(-) 6.62	FT.(BTOC)		Depth to Water / Date and Time:
Water Column:	11.8	FT.		
	(x) .163	GAL/FT.		
Well Volume:	1.92	GAL.* 1		
Total Purge Vol.:	1.92	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	85	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

5.16
77.2
+1.8
78.2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1350	.25	20.07	.717	1.53	7.47	-125.4	14.4	5.15	
1355	.5	20.16	.669	0.69	7.53	-180.1	16.3	5.24	
1400	.7	19.88	0.672	0.55	7.54	-190.2	18.9	5.24	
1405	1	20.09	0.619	0.37	7.58	-190.0	19.4	5.24	
1410	1.3	20.01	0.677	0.33	7.59	-191.9	23.8	5.24	
1415	1.6	20.17	0.617	0.30	7.60	-190.6	31.8	5.24	
1420	1.9	19.94	0.619	0.27	7.61	-188.4	26.3	5.29	
1425	2.5	19.73	0.619	0.25	7.61	-189.0	24.5	5.24	
1430	2.6	19.60	0.619	0.23	7.60	-186.5	23.3	5.24	
1435	2.7	19.64	0.617	0.22	7.60	-185.5	26.0	5.29	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1347 Purge Rate: 250

Nitrate_____ mg/L

Nitrite_____ mg/L

PAGE 2

MS/MSD — Duplicate ID No.: —

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW56DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-MW56DW-10A
Date:	1/14/10	Sampling Team:	DB, GC, MS
Weather:	SUNNY, 50's		

Total Depth:		FT.(BTOC)	Water Quality Meter:	PAGE 1
Depth to water:	(-)	FT.(BTOC)	Depth to Water / Date and Time:	
Water Column:		FT.		
	(x)	GAL/FT.		
Well Volume:	PAGE 1	GAL.		
Total Purge Vol.:		GAL.		
Purge Device:				
Pump Inlet Depth		FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/14/10 Time: 1450	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	19.67	0.680	0.20	7.60	-151.5	24.7	5.29	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1440	2.9	19.60	0.677	0.22	7.60	-132.6	24.8	5.29	
1450	3.6	19.67	0.680	0.20	7.60	-151.5	24.7	5.29	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: _____ Purge Rate: 250

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe^{2+} 0.60 mg/L

MS/MSD	Duplicate ID No.:
Signature(s):	

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: 45°, sunny & breezy

Project Number: 389017.FI.FS.86
Well ID: S12886-MW58
Sample ID: 1286-GW58-09D
Sampling Team: K. Tymrak / NWD

Total Depth: 35 FT.(BTOC)
Depth to water: (-) 8.70 FT.(BTOC)
Water Column: 26.3 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.28 GAL.
Total Purge Vol.: 13.05 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 33 FT.(BTOC)

Water Quality Meter: YSI #14218, Hanna #08988
Depth to Water / Date and Time: 12.10' btoc 12/16/09 0815

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/16/09 Time: 1020	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	19.46	0.903	0.18	6.78	-33.9	31.0	12.3	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0840	0.25	17.47	1.133	1.34	7.47	-75.4	250	9.9	cloudy
0845	0.70	18.63	1.158	0.76	7.40	-78.8	210	11.0	"
0850	1.35	18.66	1.104	0.56	7.29	-74.2	150	11.5	clear
0900	2.65	18.87	1.033	0.33	7.11	-63.8	55.0	12.1	"
0910	3.95	19.01	0.984	0.28	7.10	-53.9	45.0	12.3	"
0920	5.25	19.21	0.961	0.22	7.03	-49.1	37.0	12.3	"
0930	6.55	19.38	0.949	0.24	6.99	-44.4	34.0	12.3	"
0940	7.85	18.99	0.921	0.25	6.86	-40.8	34.0	12.3	"
0950	9.15	18.87	0.906	0.23	6.76	-38.4	32.0	12.3	"
1000	10.45	18.89	0.904	0.19	6.74	-37.0	33.0	12.3	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0830 Purge Rate: 0.5 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.0 mg/L

MS/MSD —
Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW58
Sample ID:
Sampling Team: K. Tymrak/NLWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See Page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1005	11.10	19.80	0.906	0.19	6.77	-36.1	30.0	12.3	clear
1010	11.75	19.42	09.03	0.18	6.79	-33.9	30.0	12.3	"
1015	12.40	19.52	0.904	0.19	6.77	-34.1	31.0	12.3	"
1020	13.05	19.46	0.903	0.18	6.78	-33.9	31.0	12.3	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate: 0.5 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86 MW 58
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW58-10A
Date:	3/16/10	Sampling Team:	J. Diaz
Weather:	50's cloudy		

Total Depth:	35.22	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 10.39	FT.(BTOC)	Depth to Water / Date and Time:	10.39 / 1530 on 3/16/10
Water Column:	24.83	FT. (5% = 1.26 ft)		
	(x) 0.163	GAL/FT.		
Well Volume:	4.21	GAL. x3 = 12.63 gal		
Total Purge Vol.:	7.4	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	33	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 3/16/10 Time: 1530	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.30	0.540	0.19	6.17	-38.7	70.8	11.55	cloudy

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1400	0.	NM						10.39	
1410	0.8	18.35	0.672	0.56	6.45	12.1	354	10.92	cloudy
1420	1.6	18.04	0.682	0.41	6.39	-9.4	106	11.40	clearing
1430	2.5	18.26	0.646	0.33	6.31	-20.1	84.1	11.50	stable
1440	3.3	18.15	0.607	0.31	6.25	-24.0	83.9	11.53	"
1450	4.1	18.39	0.583	0.24	6.21	-27.0	74.9	11.54	"
1500	4.9	18.27	0.571	0.22	6.20	-30.6	74.5	11.54	"
1510	5.8	18.34	0.559	0.21	6.18	-33.6	73.6	11.54	"
1520	6.6	18.34	0.550	0.20	6.18	-36.0	63.3	11.55	"
1530	7.4	18.30	0.540	0.19	6.17	-38.7	70.8	11.55	"

Analysis	Preservative	Container requirements	No. of containers
~~TCL VOCs by EPA Method 8260B~~	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	~~500 ml poly bottle~~	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1
Mercury	HNO_3	500 mL bottle	1

Observations/Notes: Purge Start Time: 1400 Purge Rate: ~ 400 mL/min

~~Nitrate _____ mg/L~~

~~Nitrite _____ mg/L~~

NM - not measured

MS/MSD Duplicate ID No.: IR86-GW58Q-10A @ 1535

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: 50°, sunny & breezy

Project Number: 389017.FI.FS.86
Well ID: 1286-MW581W
Sample ID: 1286-GW581W-09D
Sampling Team: K. Tymrak/NWD

Total Depth: 55 FT.(BTOC)
Depth to water: (-) 8.85 FT.(BTOC)
Water Column: 46.15 FT.
(x) 0.163 GAL/FT.
Well Volume: 7.52 GAL.
Total Purge Vol.: 12.55 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 50 FT.(BTOC)

Water Quality Meter: YSI #14218, Hanna #08988
Depth to Water / Date and Time: 12/16/09 @ 1100

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/16/09 Time: 1245	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	19.52	0.969	0.16	7.48	-69.4	9.50	9.00	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1115	1.0	19.86	0.963	7.68	1.12	-62.9	180	8.90	cloudy
1120	1.5	19.23	0.968	7.60	0.52	-65.2	110	8.90	"
1125	2.15	19.14	0.965	0.45	7.58	-66.6	100.	8.95	clear
1130	2.80	19.05	0.962	0.31	7.57	-67.7	95.0	9.00	"
1135	3.45	19.10	0.952	0.86	7.42	-65.6	80.0	9.00	"
1140	4.10	19.44	0.971	0.24	7.53	-68.3	70.0	9.05	"
1145	4.75	19.56	0.970	0.22	7.52	-68.9	60.0	9.00	"
1150	5.40	19.54	0.974	0.20	7.54	-69.4	55.0	9.00	"
1155	6.05	19.52	0.972	0.19	7.50	-69.3	45.0	9.00	"
1200	6.70	19.51	0.971	0.17	7.50	-69.4	35.0	9.00	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2
Microbial	RNA Preservative	filter	1

Observations/Notes: Purge Start Time: 1105 Purge Rate: 0.5 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe^{2+} 1.6 mg/L

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1286-MW58IW
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See Page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1205	7.35	19.52	0.971	0.17	7.52	-69.7	33.0	9.00	clear
1210	8.00	19.53	0.970	0.16	7.49	-68.9	26.0	9.00	"
1215	8.65	19.58	0.971	0.17	7.50	-68.9	28.0	9.00	"
1220	9.30	19.53	0.971	0.17	7.50	-69.0	22.0	9.00	"
1225	9.95	19.55	0.971	0.17	7.53	-69.3	18.0	9.00	"
1230	10.60	19.50	0.970	0.16	7.51	-69.1	17.0	9.00	"
1235	11.25	19.54	0.970	0.16	7.49	-69.5	14.0	9.00	"
1240	11.90	19.51	0.969	0.16	7.48	-69.5	11.0	9.00	"
1245	12.55	19.52	0.969	0.16	7.48	-69.4	9.50	9.00	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2
Microbial	RNA Preservative	filter	1

Observations/Notes: Purge Start Time: Purge Rate: 0.5 L/min

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 3/16/10
Weather: 50's cloudy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW58IW
Sample ID: IR86-GW58-10A (JD)
Sampling Team: J. Diner IW-10A

Total Depth: 54.58 FT.(BTOC)
Depth to water: (-) 9.15 FT.(BTOC)
Water Column: 45.43 FT. (15% = 2.2 ft)
(x) 0.163 GAL/FT.
Well Volume: 7.41 GAL. (x3 = 22.2 gal)
Total Purge Vol.: 8.0 GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 52 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 1305 / 9.23 ft btoc

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 3/16/10 Time: 1305 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	18.58	0.651	0.23	6.83	-83.3	9.76	9.23	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1130 ~~1030~~	0	NM						9.15	—
~~10~~ 1145	0.7	17.36	0.639	1.34	6.88	96.8	>1000	9.20	cloudy white
1155	1.4	18.04	0.640	0.97	6.83	-48.8	>1000	9.25	cloudy white
1205	2.8	18.38	0.640	0.60	6.85	-59.1	>1000	9.24	clearing
1215	3.0	18.46	0.652	0.41	6.83	-73.2	371	9.24	"
1225	4.0	18.50	0.651	0.35	6.82	-77.3	127	9.24	"
1235	5.0	18.59	0.651	0.30	6.83	-80.4	60.4	9.23	"
1245	6.0	18.50	0.652	0.28	6.83	-81.1	40.4	9.23	clear
1255	7.0	18.55	0.651	0.25	6.83	-83.0	21.9	9.23	"
1305	8.0	18.58	0.651	0.23	6.83	-83.3	9.76	9.23	"

Analysis	Preservative	Container requirements	No. of containers
~~TCL VOCs by EPA Method 8260B~~	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK-175~~	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
~~Iron and Manganese by EPA Method 6010B~~	HNO_3	250 ml poly bottle	1
Mercury	(JD) 1:1 HNO_3	500 mL Poly	1

Observations/Notes: Purge Start Time: 1130 Purge Rate: ~ 500 mL/min

~~Nitrate mg/L~~
~~Nitrite mg/L~~

Increase purge rate @ 1205
NM- not measured.

MS/MSD Duplicate ID No.: ~~IR86-GW58D-10A~~ (JD)
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location:
Event: Comprehensive Groundwater Sampling
Date: ~~1~~ 1/13/10
Weather: SUNNY, 30'S

Project Number: 389017.FI.FS.86
Well ID: I286 - MW58IDW
Sample ID: I286 - ~~B~~WS80W - ~~B~~0A
Sampling Team: MS + DB

Total Depth: 90 FT.(BTOC)
Depth to water: (-) FT.(BTOC) 10' SCREEN
Water Column: ~~15~~ 13.13 FT. [80'-90' BTOC]
(x) 0.163 GAL/FT.
Well Volume: ~~1.795~~ ~~1.63~~ GAL. x1 2.12
Total Purge Vol.: ~~1.795~~ ~~1.63~~ GAL. 2.12

Water Quality Meter: YSI/11971 HANNA/090018
Depth to Water / Date and Time: 9.65' BTOC 1/13/10 1020

Purge Device: BLADDER PUMP 11169
Pump Inlet Depth: ~~85~~ MS 83' FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1150	0	17.78	1.393	0.69	11.14	-210.4	126	12.80	
1155	1.0	16.87	1.401	0.53	11.14	-263.2	106	12.12	
1200	1.4	18.39	1.386	0.38	11.07	-274.0	111	13.40	
1255	2.3→0	17.60	1.680	0.47	10.43	-255.4	85.6	10.35	
1300	0.3	18.46	1.022	0.26	9.99	-268.1	80.0	10.35	
1305	0.6	18.56	0.996	0.22	9.84	-275.9	89.4	10.35	
1310	0.9	18.61	0.989	0.21	9.79	-281.4	95.5	10.35	
1315	1.2	18.63	0.950	0.20	9.26	-271.1	112	10.35	
1320	1.5	18.45	0.953	0.19	9.06	-268.6	108	10.35	
1325	1.8	18.32	0.955	0.18	8.99	-279.6	100	10.35	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: ~~1115~~ 1255 Purge Rate: 300

Nitrate ____ mg/L
Nitrite ~~PAGE 3~~ ____ mg/L

1150 DUE TO DROPPING DTW INFLATE PACKER TO 40 PSI
1255 PUMP START W/O DRAWDOWN

MS/MSD
Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MSITE 86
Event: Comprehensive Groundwater Sampling
Date: 1/13/10
Weather:

Project Number: 389017.FI.FS.86
Well ID: IR86-MW58DW
Sample ID: IR86-GW58DW-10A
Sampling Team: MS
KH

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
PAGE 8
Purge Device:
Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time: PAGE 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1330	2.0	18.12	0.962	0.17	8.91	-291.6	89.8	10.35	
1335	2.45	18.22	0.965	0.23	8.85	-298.8	90.8	10.35	
1340	2.75	18.12	0.964	0.17	8.78	-295.6	87.9	10.35	
1345	3.05	18.14	0.967	0.20	8.76	-309.1	89.1	10.35	
1350	3.40	18.07	0.971	0.13	8.69	-308.9	80.2	10.35	
1355	3.70	18.10	0.970	0.14	8.65	-297.9	79.9	10.35	
1400	4.00	18.08	0.970	0.14	8.63	-307.5	77.0	10.35	
1405	4.30	18.19	0.975	0.15	8.58	-310.4	74.7	10.35	
1410	4.60	18.35	0.973	0.14	8.56	-305.1	68.3	10.35	
1415	4.90	18.30	0.965	0.17	8.56	-311.6		10.35	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate mg/L
Nitrite mg/L
PAGE 7

MS/MSD Duplicate ID No.:
Signature(s):

CH2MHILL

3 of 3

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: SITE 56
Event: Comprehensive Groundwater Sampling
Date: 1/13/10
Weather:

Project Number: 389017.FI.FS.86
Well ID: FR86-MW58DW
Sample ID: FR86-GW58DW-10A
Sampling Team: MS
DB

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

Water Quality Meter:
Depth to Water / Date and Time: PAGE 1

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1/13/10 Time: 1431	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	18.47	0.950	0.16	8.48	-300.6	63.4	10.35	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1420	5.2	18.47	0.957	0.14	8.51	-307.6	65.3	10.35	
1425	5.5	18.70	0.957	0.15	8.50	-307.4	63.6	10.35	
1428	5.8	18.44	0.956	0.17	8.49	-307.5	63.1	10.35	
1431	6.1	18.47	0.950	0.16	8.48	-300.6	63.4	10.35	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe^{2+} 0.0 mg/L

PAGE 2

MS/MSD Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW59
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW59-09D
Date:	12/12/09	Sampling Team:	K. Ramsey / CLT
Weather:	39°, P. Cloudy		

Total Depth:	35	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 5.41	FT.(BTOC)	Depth to Water / Date and Time:	5.41 12/12/09 1015
Water Column:	29.59	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	4.82	GAL. × 3 = 14.5		
Total Purge Vol.:	~19	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~30	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/12/09 Time: 1240	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low flow			see page 2					

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1025	<1/2	17.35	0.668	2.03	6.36	-9.4	129	5.42	Cloudy
1030	~3/4	18.18	0.696	0.74	6.37	-17.3	120	5.42	Cloudy
1035	~1 1/4	18.18	0.646	0.46	6.42	-28.8	100	5.45	Cloudy
1040	<2	18.20	0.598	0.36	6.48	-40.9	143	5.44	Cloudy
1045	>2 1/4	18.27	0.580	0.32	6.51	-47.7	142	5.42	Cloudy
1050	~3	18.28	0.560	0.34	6.54	-53.9	137	5.43	Cloudy
1100	~4	18.34	0.519	0.25	6.60	-66.2	52.7	5.47	Cloudy
1110	~5	18.34	0.594	0.20	6.61	-71.8	35.3	5.48	Clear
1120	<6 1/2	18.36	0.593	0.20	6.62	-74.7	29.7	5.45	Clear
1130	>7 1/2	18.37	0.581	0.19	6.64	-79.3	30.2	5.49	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1018 Purge Rate: (see below)

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.0 mg/L

.024 turned up purge rate b/c <0.3 L/min

New flow rate ~>0.35 L/min.

1047 increase flow rate to ~0.5 L/min

MS/MSD —— Duplicate ID No.: IR86-GW59D-09D YES

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/12/09
Weather: 39° / P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW59
Sample ID: 1R86-GW59-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 35 FT.(BTOC)
Depth to water: (-) 5.41 FT.(BTOC)
Water Column: 29.59 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.82 GAL. x 3 = 14.5
Total Purge Vol.: ~17 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~30 FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.41 12/12/09 1015

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

4
4
4 1/2

SAMPLE DATA

Date: 12/12/09 Time: 1240	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.33	0.571	0.15	6.66	-87.9	9.68	5.48	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1140	~8 3/4	18.40	0.581	0.17	6.64	-80.7	19.5	5.45	Clear
1150	~10	18.31	0.576	0.17	6.65	-82.7	13.7	5.47	Clear
1200	>11 1/4	18.35	0.581	0.17	6.64	-83.2	16.6	5.42	Clear
1210	~12 1/2	18.36	0.574	0.16	6.66	-85.6	13.6	5.48	Clear
1220	~13 3/4	18.35	0.577	0.16	6.65	-85.5	10.8	5.48	Clear
1230	~15	18.34	0.576	0.15	6.65	-86.7	11.0	5.47	Clear
1240	~15 3/4	18.33	0.571	0.15	6.66	-87.9	9.68	5.48	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1018 Purge Rate: see pg 1
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.0 mg/L

see page 1

MS/MSD ——— Duplicate ID No.: 1R86-GW59D-09D YES

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	CTO81 - Site 86	Well ID:	IR86-MW591W
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW591W-09D
Date:	12/12/09	Sampling Team:	K. Ramsey / CLT
Weather:	45°, P. Cloudy		

Total Depth:	55	FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 5.58	FT.(BTOC)	Depth to Water / Date and Time:	5.58 12/12/09 1440
Water Column:	49.42	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	8.05	GAL. x3 = ~24		
Total Purge Vol.:	~13	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~53	FT.(BTOC)		

W.C. = 2.47

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/12/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	—	see	page		—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1445	<1/4	16.93	0.700	4.15	11.36	-52.9	97.7	5.85	Clear
1450	>1/4	17.96	0.650	0.82	11.23	-35.2	144	5.91	Cloudy
1455	~3/4	18.13	0.601	0.61	11.13	-33.5	137	5.91	Cloudy
1500	~1 1/4	18.17	0.466	0.46	10.74	-32.2	118	5.98	Cloudy
1510	>2	18.17	0.327	0.35	9.78	-37.7	80.9	5.93	Slightly Cloudy
1520	>3	18.17	0.312	0.27	9.22	-58.9	67.7	5.91	Slightly Cloudy
1530	~4	18.23	0.307	0.24	8.91	-258.6	61.0	5.91	Clear
1540	~5	18.18	0.286	0.21	8.82	-293.8	64.4	5.85	Clear
1550	~6	18.21	0.271	0.19	8.94	-316.0	63.8	6.01	Clear
1600	~7	18.25	0.266	0.17	8.81	-310.7	52.2	5.99	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1440 Purge Rate: (see below)

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe ___ mg/L

Pumping rate turned up at 1448 b/c <0.3 L/min (was ~0.25 L/min)
New pumping rate set at ~0.35 L/min
1542 turned pumping rate up to ~0.4 L/min

MS/MSD ——— Duplicate ID No.: ———

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:		Well ID:	IR86-MW591W
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW591W-09D
Date:	CTO-81 Site 86	Sampling Team:	K. Ramsey/CLT
Weather:	45°, P. Cloudy		
Total Depth:	55 FT.(BTOC)	Water Quality Meter:	YSI 556
Depth to water:	(-) 5.58 FT.(BTOC)	Depth to Water / Date and Time:	5.58 12/12/09 1440
Water Column:	49.42 FT.		
	(x) 0.163 GAL/FT.		
Well Volume:	8.05 GAL. x 3		
Total Purge Vol.:	~13 GAL.		
Purge Device:	Bladder Pump		
Pump Inlet Depth	~53 FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: 12/12/09 Time: 1640	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	18.21	0.266	0.13	8.99	-356.1	33.8	5.92	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1610	~8	18.22	0.267	0.16	8.80	-321.8	49.6	6.01	Clear
1620	~9¼	18.19	0.266	0.15	8.87	-333.2	39.4	5.99	Clear
1630	>10¼	18.20	0.267	0.14	9.01	-352.8	36.2	6.01	Clear
1637 ~~1630~~	~11	18.16	0.264	0.14	8.98	-356.7	32.2	6.01	Clear
1640	>11¼	18.21	0.266	0.13	8.99	-356.1	33.8	5.92	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1440 Purge Rate: see pg 1

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 0.5 mg/L

See notes on pg 1

MS/MSD Duplicate ID No.:

Signature(s): Kelly A. Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	MCAS New River	Well ID:	IR26-MW59DW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR26-GW59DW-090D
Date:	12-18-09	Sampling Team:	K. Howell / M. Smith
Weather:	Cold overcast 40's light breeze		

Total Depth:	90	FT.(BTOC)	Water Quality Meter:	Solinist
Depth to water:	(-) 5.27	FT.(BTOC)	Depth to Water / Date and Time:	5.27 / 12-18-09 0940
Water Column:	94.73	FT.		
	(x) 0.16	GAL/FT.		
Well Volume:	13.55	GAL.		
Total Purge Vol.:	40	GAL.		
Purge Device:	Proactive Monsoon			
Pump Inlet Depth	87'	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-18-09 Time: 1320	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU KJH	Depth to water (ft bgs)	Color / Odor / Comments
Method: Submersible	18.39	0.984	0.06	7.54	-165.4	576	26.9	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0945	—	14.32	1.80	3.69	11.76	-144.5	424	4.45	
0955	0.75	17.45	0.949	0.47	8.64	-140.2	278	15.50*	
1005	2.5	18.04	0.974	0.36	9.85	-144.5	145	14.31	FR = 0.125 gpm
1015	4.5	17.68	0.981	0.28	7.80	-175.9	195	17.57	
1025	6.5	18.10	0.978	0.24	9.78	-182.3	180	20.20	
1035	8.5	18.24	0.970	0.20	9.56	-177.1	175	22.55	
1045	10.5	18.41	0.967	0.15	9.27	-171.1	353	24.05	FR = 0.20 gpm
1100	13.0	18.37	0.982	0.12	8.32	-187.5	165	27.72	
1115	16.00	18.37	0.987	0.12	7.80	174.9	65.2	27.05	
1130	20.0	18.32	0.988	0.10	7.62	-174.5	55.4	26.98	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: ~~0930~~ 0940 Purge Rate: 0.20 gpm

Nitrate Ø mg/L

Nitrite Ø mg/L

* increase pump speed to 0.1/0.2 gpm - will purge 3 volumes due to draw down

Fe Ø mg/L

MS/MSD Duplicate ID No.:

Signature(s): KHowell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: ~~Kinder Morgan~~ NavFac Md Atlantic
Location: ~~KMST CT#3~~ MCAS New River
Event: ~~Jun-09~~ Comp GW Sampling
Date: 12-18-09
Weather: Cold overcast 40's light breeze

Project Number: ~~384721.09.GW~~ 389017.F1.FS.86
Well ID: ~~MW-20~~ IR86-GW59DW
Sample ID: MW-20 IR86-GW59DW-09D
Sampling Team: K Howell M. Smith

Total Depth: 40 FT.(BTOC)
Depth to water: (-) 5.27 FT.(BTOC)
Water Column: 94.73 FT.
(x) 0.16 GAL/FT.
Well Volume: 13.55 GAL.
Total Purge Vol.: 40 GAL.

Purge Device: Monsoon Proactive

Measuring Device: Solonst
Date and Time: 5.27 / 12-18-09 0940

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Other: _____	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		Constant for 3 readings	± 3%	± 10%	± 0.1	± 10 mV	± 10% or <10		
1150	23	18.42	0.988	0.10	7.62	-162.1	58	26.91	
1200	25	18.41	0.988	0.09	7.60	-158.5	75.8		
1220	28	18.42	0.988	0.09	7.54	-152.4	45.8	27.0	
1230	31	18.42	0.988	0.08	7.54	-152.2	39.7		
1245	33	18.41	0.988	0.08	7.52	-151.7	58.8		
1300	36	18.42	0.988	0.07	7.52	-151.2	57.0		
1310	38	18.39	0.988	0.06	7.52	-152.1	58		
1320	40	18.39	0.984	0.06	7.54	-165.4	57.0	26.9	

Sample information: method, container number, size, and type, preservative used.

Analysis	Preservative	Container requirements	No. of containers
~~BTEX, MTBE, Naphthalene, 1,2-DCA (8260B)~~			
	See sheet 1		

Observations/Notes:

MS/MSD
Duplicate ID No.:
Signature(s): K Howell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	MCAS New River	Well ID:	IR86 - MW60
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86 - GW60 - 09D
Date:	12-18-09	Sampling Team:	K. Howell / P. Brown
Weather:	Rain 40's windy		

Total Depth:	35	FT.(BTOC)	Water Quality Meter:	YSI 556 MPS
Depth to water:	(-) 6.06	FT.(BTOC)	Depth to Water / Date and Time:	6.06 / 12-18-09 1550
Water Column:	28.94	FT.		
	(x) 0.16	GAL/FT.		
Well Volume:	4.6	GAL.		
Total Purge Vol.:	6.0	GAL.		
Purge Device:	BED Well wizard bladder Pump			
Pump Inlet Depth	29'	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-18-09 Time: 1730	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: bladder	16.90	1.056	0.12	6.67	-74.5	34.2	6.13	clear / none

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
~~1515~~ 1555	—	16.03	0.739	0.54	7.66	-5.6	68.2	6.12	
1605	0.75 gal	16.83	0.151	0.58	6.76	-76.5	308	6.12	FR @ 0.3 L/min
1610	1.25	16.75	1.147	0.38	6.68	-77.2	319	6.12	
1615	1.50	16.75	1.149	0.37	6.67	-79.5	317	6.12	
1620	1.75	16.92	1.40	0.29	6.67	-76.2	261	6.12	FR @ 0.5 L/min
1625	2.0	17.07	1.44	0.25	6.67	-76.9	227	6.12	
1630	2.5	17.05	1.136	0.23	6.66	-77.8	197	6.12	
1635	3.0	17.03	1.109	0.18	6.66	-77.5	135	6.13	
1640	3.5	16.97	1.094	0.15	6.66	-76.0	99.3	6.13	
1645	4.0	16.95	1.089	0.15	6.66	-75.7	92.2	6.13	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1550 Purge Rate: 0.5 L/min

Nitrate Ø mg/L

Nitrite Ø mg/L

Fe Ø mg/L

MS/MSD Duplicate ID No.:

Signature(s): KHowell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MCAS New River
Event: Comprehensive Groundwater Sampling
Date: 12-18-09
Weather: Rain - 40° windy

Project Number: 389017.FI.FS.86
Well ID: IR86-MW60
Sample ID: IR86-GW60-09D
Sampling Team: K. Howell / D. Brown /

Total Depth: 35 FT.(BTOC)
Depth to water: (-) 6.06 FT.(BTOC)
Water Column: 28.94 FT.
(x) 0.16 GAL/FT.
Well Volume: 4.6 GAL.
Total Purge Vol.: 6.0 GAL.

Purge Device: QED Well Wizard bladder pump

Pump Inlet Depth 29 FT.(BTOC)

Water Quality Meter: YSI 556MPS
Depth to Water / Date and Time: 6.06 12-18-09 1550

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-18-09 Time: 1730	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: bladder	16.90	1.056	0.12	6.67	-74.5	34.2	6.13	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1650	4.5	16.95	1.066	0.15	6.66	-74.5	71.5	6.13	
1655	5.0	16.88	1.058	0.15	6.66	-74.2	59.3	6.13	
1700	5.5	16.91	1.058	0.12	6.67	-73.6	52.7	6.13	
1710	6.0	16.90	1.056	0.12	6.67	-74.5	34.2	6.13	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1550 Purge Rate: 0.5 L/min

Nitrate Ø mg/L
Nitrite Ø mg/L
Fe Ø mg/L

MS/MSD Duplicate ID No.:

Signature(s): K Howell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: IR86-MW60IW
Event: Comprehensive Groundwater Sampling
Sample ID: IR86-GW60IW-09D
Date: 12/17/09
Sampling Team: D. Brown/CLT
Weather: 50° Sunny

Total Depth: 55.0 FT.(BTOC)
Depth to water: (-) 5.03 FT.(BTOC)
Water Column: 49.97 FT.
(x) .163 GAL/FT.
Well Volume: 8.14 GAL.
Total Purge Vol.: GAL.
Purge Device: Bladder Pump
Pump Inlet Depth 50' FT.(BTOC)

Water Quality Meter: YSI 556 S/n 14218
Depth to Water / Date and Time: 12/17 1230 5.03 f

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Sheet 1 of 2

SAMPLE DATA

Date: 12/17/09 Time: 1450 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	18.1	.805	.17	7.34	-125.3	9.7	5.70	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1235	0.4	18.0	.935	1.15	9.13	23	345	5.08	Cloudy, no odor
1240	0.8	18.0	.719	1.03	8.45	-5	271	5.15	
1310	3.2	18.1	.725	1.01	8.21	-17	283	5.49	
1315	3.9	18.2	.739	.79	7.95	-34	301	5.52	
1320	4.2	18.1	.787	.65	7.80	-85	295	5.58	
1325	4.6	18.1	.794	.43	7.65	-101	276	5.60	
1330	5.0	18.2	.799	.21	7.41	-99	249	5.63	
1335	5.4	18.2	.810	.15	7.35	-114	235	5.65	
1340	5.8	18.2	.803	.17	7.34	-115	121	5.65	
1345	6.2	18.2	.805	.18	7.34	-118	135	5.65	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes:
Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe 1.1 mg/L

Purge Start Time: 1230
Purge Rate: 0.3 L/min

went to drop off microbial sample kit to Maggie Smith @ 1240.
Went to assist M. Smith @ 1345. Maggie Smith dislocated her thumb.

MS/MSD
Duplicate ID No.:
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location:
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: 50° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW60IW
Sample ID: IR86-GW60IW-09D
Sampling Team:

Total Depth: FT.(BTOC)
Depth to water: (1) See FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: Sheet GAL.

Purge Device: /

Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1430	10.1	18.1	.800	.17	7.34	-121.1	18.3	5.70	
1435	10.5	18.1	.805	.17	7.34	-125.7	19.1	5.70	
1440	10.9	18.1	.806	.16	7.34	-129.3	10.4	5.70	
1445	11.4	18.1	.802	.17	7.34	-128.6	9.5	5.70	
1450	11.9	18.1	.805	.17	7.34	-125.3	9.7	5.70	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate _____ mg/L
Nitrite _____ mg/L
Fe ___ mg/L

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW61
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW61-0901
Date:	12/12/09	Sampling Team:	D. Brown / CLT
Weather:	50° Cloudy		

Total Depth:	35.0	FT.(BTOC)	Water Quality Meter:	YSI 556 S/N 04180
Depth to water:	(-) 5.31	FT.(BTOC)	Depth to Water / Date and Time:	12/12/09
Water Column:	29.69	FT.		29.69 * 0.05 = 1.48
	(x) .163	GAL/FT.		
Well Volume:	4.84	GAL.		
Total Purge Vol.:	5.05	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	30'	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 12/12/09 Time: 1605	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: low Flow	16.2	.910	.20	6.46	-34.7	7.9	6.50	Clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1440	0.4	16.6	.907	.53	6.51	-27.2	312	5.34	Cloudy, no odor
1445	0.6	16.5	.906	.50	6.50	-28.1	283	5.38	↓
1450	0.8	16.5	.895	.48	6.50	-28.8	172	5.55	Clear, no odor
1455	1.20	16.5	.901	.47	6.51	-30.1	135	5.79	
1500	1.55	16.5	.900	.46	6.50	-29.3	148	5.98	
1505	1.90	16.4	.885	.40	6.49	-32.1	127	6.36	
1510	2.10	16.5	.897	.37	6.50	-31.2	121	6.39	
1515	2.30	16.5	.901	.35	6.50	-30.1	105	6.40	
1525	2.70	16.5	.904	.32	6.50	-32.9	101	6.42	
1530	2.90	16.5	.900	.30	6.49	-33.7	83	6.45	↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1430 Purge Rate: 0.3 L/min

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe = 2.8 mg/L

Change flow rate to 0.5 L/min @ 1450
changed flow rate to 0.3 L/min @ 1505

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/12/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: IR86-MW61
Sample ID: IR86-GW61-09D
Sampling Team: D. Brown / CLT

Total Depth: See FT.(BTOC)
Depth to water: (-) See FT.(BTOC)
Water Column: See FT.
(x) GAL/FT.
Well Volume: See GAL.
Total Purge Vol.: See GAL.
Purge Device: Sheet 1
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1540	3.3	16.4	.921	.27	6.48	-33.7	38.1	6.48	clear, no odor
1545	3.65	16.3	.903	.25	6.48	-32.1	17.3	6.50	↓
1550	4.00	16.2	.908	.21	6.48	-32.9	12.1	6.49	↓
1555	4.35	16.2	.902	.20	6.46	-33.8	8.3	6.49	↓
1600	4.70	16.2	.899	.20	6.46	-34.1	7.3	6.50	↓
1605	5.05	16.2	.910	.20	6.46	-34.7	7.9	6.50	↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:
Nitrate ____ mg/L
Nitrite ____ mg/L
Fe ____ mg/L

Increased Flow rate @ 1540 to 0.5 L/min

MS/MSD Duplicate ID No.:
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IR86-MW61IW
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW61IW-09D
Date:	12/12/09	Sampling Team:	D. Brown / CLT
Weather:	50° sunny		

Total Depth:	55.0	FT.(BTOC)	Water Quality Meter:	YSI DO 556 S/N 04180
Depth to water:	(-) 6.80	FT.(BTOC)	Depth to Water / Date and Time:	6.80 12/12/09
Water Column:	48.2	FT.		
	(x) .163	GAL/FT.		
Well Volume:	7.86	GAL.		
Total Purge Vol.:	8.55	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	50'	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

5% Drawdown = 2.41 ft

Page 1 of 2

SAMPLE DATA

Date: 12/12/09 Time: 1240	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: low Flow	17.5	.889	.19	6.68	-110.7	9.9	6.90	clear, no odor

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1040	0.4	17.6	.893	1.21	6.95	-11.2	421	6.83	cloudy, no odor
1050	0.8	17.5	.913	0.77	6.70	-55.8	385	6.83	↓
1100	1.5	17.4	.903	0.70	6.68	-63.3	391	6.85	↓
1110	2.3	17.5	.915	.43	6.65	-70.0	175	6.89	clear, no odor
1120	3.0	17.6	.955	.40	6.65	-71.5	135	6.90	↓
1130	3.7	17.6	.943	.35	6.65	-75.3	121	6.90	↓
1140	4.4	17.6	.921	.31	6.65	-81.2	109	6.91	↓
1145	4.8	17.7	.903	.28	6.65	-92.1	101	6.90	↓
1150	4.99	17.7	.913	.27	6.65	-93.1	83.2	6.90	↓
1155	5.35	17.8	.905	.25	6.65	-95.2	76.1	6.90	↓

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1030 Purge Rate: 0.3 L/min

Nitrate 0.0 mg/L

Nitrite 0.0 mg/L

Fe 3.0 mg/L

Changed Purge rate to 0.5L/min @ 1050

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: IR86 - MW61IW
Event: Comprehensive Groundwater Sampling
Sample ID: IR86-GW61IW-090
Date: 12/12/09
Sampling Team: D. Brown/CLT
Weather: 50° Sunny

Total Depth: ____ FT.(BTOC)
Depth to water: (-) See ____ FT.(BTOC)
Water Column: ____ FT.
(x) Sheet ____ GAL/FT.
Well Volume: ____ GAL.
Total Purge Vol.: ____ GAL.
Purge Device: 1
Pump Inlet Depth ____ FT.(BTOC)

Water Quality Meter: See Sheet 1
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1200	5.70	17.6	.934	.31	6.68	-105.1	53.2	6.90	Clear, no odor
1205	6.05	17.6	.903	.30	6.68	-102.1	32.1	6.90	
1210	6.40	17.7	.905	.30	6.68	-103.3	28.7	6.90	
1215	6.75	17.6	.903	.21	6.68	-108.1	23.2	6.90	
1220	7.10	17.6	.892	.19	6.68	-109.2	20.1	6.90	
1225	7.45	17.5	.893	.18	6.68	-110.1	18.7	6.90	
1230	7.80	17.5	.890	.18	6.68	-109.3	16.3	6.90	
1235	8.20	17.5	.891	.19	6.68	-110.3	12.1	6.90	
1240	8.55	17.5	.889	.19	6.68	-110.7	9.9	6.90	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes:
Purge Start Time: ____
Purge Rate: 0.5 L/min
Nitrate ____ mg/L
Nitrite ____ mg/L

MS/MSD
Duplicate ID No.:
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MCAS New River
Event: Comprehensive Groundwater Sampling
Date: 12-18-09
Weather: Rain/wind 40°

Project Number: 389017.FI.FS.86
Well ID: 1RB6MW61DW
Sample ID: 1RB6-GW61DW-09D
Sampling Team: K. Howell / M. Smith

Total Depth: 90 FT.(BTOC)
Depth to water: (-) 7.11 FT.(BTOC)
Water Column: 82.89 FT.
(x) 0.163 GAL/FT.
Well Volume: 13.20 GAL.
Total Purge Vol.: 39.18 GAL.

Purge Device: Proactive Submersible pump

Pump Inlet Depth 87 FT.(BTOC)

Water Quality Meter: YSI 556 MPS
Depth to Water / Date and Time: 7.11 ft / 12-18-09 0850

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-18-09 Time: 1225	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: submersible	18.14	1.945	0.07	8.12	-203.4	47.2	35.50	clear / none

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0855	0.5	16.85	1.78	0.66	8.40	-182.5	18.7	9.11	
0905	3.0	17.84	0.821	0.23	8.32	-188.8	22.6	21.50	
0915	5.5	18.04	1.813	0.17	8.29	-202.6	14.6	25.99	
0925	7.5	17.88	1.823	0.10	8.30	-204.5	14.6	26.25	
0935	10.5	18.21	1.863	0.17	8.29	-205.5	24.3	32.30	
0945	12.0	17.83	1.923	0.16	8.26	-207.9	16.3	33.25	
0955	15.0	18.41	1.910	2.29	8.27	-191.6	16.3	33.90	
1005	17.0	18.14	1.946	1.89	8.20	-198.0	26.3	33.90	
1015	18.5	18.13	1.929	1.62	8.19	-198.7	62.2	34.20	
1040	23.0	18.29	1.92	0.07	8.19	-211.3	114	35.91	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0855 Purge Rate: 0.5 L/min *
Nitrate Ø mg/L
Nitrite Ø mg/L
Fe^{2+} 1.1 mg/L
increased to 0.1/0.2 gpm - purge 3 volumes

MS/MSD Duplicate ID No.:
Signature(s): KHowell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MCAS New River
Event: Comprehensive Groundwater Sampling
Date: 12-18-09
Weather: Rain / Wind 40's

Project Number: 389017.FI.FS.86
Well ID: IRB6-MW01DW
Sample ID: IRB6-GW01DW-091D
Sampling Team: K Howell / M. Smith

Total Depth: 90 FT.(BTOC)
Depth to water: (-) 7.11 FT.(BTOC)
Water Column: 82.89 FT.
(x) 0.16 GAL/FT.
Well Volume: 13.20 GAL.
Total Purge Vol.: 39.18 GAL.

Purge Device: Proactive Submersible Pump

Pump Inlet Depth 87 FT.(BTOC)

Water Quality Meter: YSI 556 MPS
Depth to Water / Date and Time: 7.11 ft / 12-18-09 0850

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-18-09 Time: 1225	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Submersible	18.14	1.945	0.07	8.12	-203.4	47.2	35.50	clear / none

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1100	28	18.22	1.928	0.07	8.15	-210.5	99.7	35.50	
1110	30.5	18.27	1.931	0.06	8.14	-201.9	84.2	35.41	
1130	34.5	18.23	1.940	0.10	8.13	-207.4	54.6	35.57	
1140	36.5	18.16	1.942	0.09	8.13	-200.7	49.0	35.50	
1155	38.5	18.16	1.944	0.08	8.12	-203.3	58.4	35.50	
1210	39.0	18.16	1.944	0.08	8.12	-203.4	49.2	35.57	
1220	41.0	18.14	1.945	0.07	8.12	-203.4	47.2	35.50	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0855 Purge Rate:
Nitrate Ø mg/L
Nitrite Ø mg/L
Fe^{2+} = 1.1 mg/L

MS/MSD Duplicate ID No.:
Signature(s): K Howell

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather: 55°, sunny

Project Number: 389017.FI.FS.86
Well ID: 12886-MW62
Sample ID: 12886-GW62-09D
Sampling Team: K. Tymrak / NWD

Total Depth: 35.25 FT.(BTOC)
Depth to water: 7.70 (-) ~~8.85~~ FT.(BTOC)
Water Column: 27.55 ~~26.4~~ FT.
0.163 (x) ~~0.163~~ GAL/FT.
Well Volume: 4.49 ~~4.30~~ GAL.
Total Purge Vol.: 13.55 GAL.

Water Quality Meter: YSI # 14218, Hanna # 08988
Depth to Water / Date and Time: 8.85' btoc 12/14/09 @ 1230

Purge Device: Bladder Pump

Pump Inlet Depth 32 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/14/09 Time: 1535	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: BladderPump	17.91	0.696	0.15	6.95	-94.0	9.7	7.95	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1255	0.75	18.30	0.704	0.84	7.18	-90.9	~~7.98~~ OR*	7.90	cloudy/brown
1300	1.15	18.24	0.717	0.49	7.08	-93.5	OR*	7.95	cloudy
1305	1.55	18.21	0.711	0.39	7.05	-94.7	OR*	7.95	"
1310	1.95	18.17	0.704	0.31	7.04	-96.7	450	7.95	"
1320	2.75	18.31	0.706	0.29	7.02	-97.2	240	7.95	clear
1330	3.55	18.14	0.703	0.23	7.00	-97.2	150	7.95	clear
1340	4.35	18.04	0.702	0.19	6.98	-96.9	95.0	7.95	"
1350	5.15	17.96	0.700	0.22	6.96	-95.8	70.0	7.95	"
1400	5.95	17.83	0.701	0.22	7.01	-96.2	85.0	7.95	"
1410	6.75	18.10	0.703	0.25	7.13	-97.1	100	7.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1245 Purge Rate: 0.3 L/min

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe^{2+} 1.8 mg/L

OR* = out of range

MS/MSD —
Duplicate ID No.: 12886-GW62D-09D @ 1540
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: 1T86-MW62
Event: Comprehensive Groundwater Sampling
Sample ID:
Date: 12/14/09
Sampling Team: K. Tymrak / NWO
Weather:

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

See page 1

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/14/09 Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1430	7.55	17.93	0.698	0.28	7.01	-94.5	55.0	7.95	clear
1430	8.35	17.97	0.698	0.21	6.97	-95.2	39.0	7.95	"
1435	8.75	17.97	0.698	0.18	6.97	-95.6	34.0	7.95	"
1440	9.15	18.00	0.698	0.17	6.97	-95.7	30.0	7.95	"
1445	9.55	17.97	0.697	0.18	6.97	-95.8	29.0	7.95	"
1450	9.95	17.95	0.696	0.16	6.96	-95.6	24.0	7.95	"
1455	10.35	17.97	0.697	0.16	6.96	-95.6	23.0	7.95	"
1500	10.75	17.97	0.698	0.20	6.96	-95.6	19.0	7.95	"
1505	11.15	17.94	0.697	0.17	6.95	-95.0	19.0	7.95	"
1510	11.55	17.92	0.697	0.16	6.95	-95.2	17.0	7.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
OK ~~Metals by~~ EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes:
Purge Start Time:
Purge Rate: 0.3 L/min

Nitrate_____ mg/L
Nitrite _____ mg/L
Fe

MS/MSD
Duplicate ID No.:

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/14/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: 1R86-MW62
Sample ID:
Sampling Team: K. Tymrak / NWD

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

Purge Device:

Pump Inlet Depth FT.(BTOC)

Water Quality Meter:
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1515	11.95	17.94	0.697	0.16	6.95	-94.7	16.0	7.95	clear
1520	12.35	17.92	0.697	0.16	6.95	-94.5	13.0	7.95	"
1525	12.75	17.94	0.697	0.16	6.95	-94.3	11.0	7.95	"
1530	13.15	17.91	0.696	0.16	6.95	-94.2	10.0	7.95	"
1535	13.55	17.91	0.696	0.15	6.95	-94.0	9.7	7.95	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate_____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD Duplicate ID No.:

Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	**Project Number:**	389017.FI.FS.86
Location:	Site 86	**Well ID:**	IR86-MW63
Event:	Comprehensive Groundwater Sampling	**Sample ID:**	IR86-GW63-10A
Date:	1-13-10	**Sampling Team:**	G. Little / CLT
Weather:	Cold 35°F, clear 5-10 mph wind		

Total Depth:	35	FT.(BTOC)	MaxD 8.87	**Water Quality Meter:**
Depth to water:	(-) 7.50	FT.(BTOC)		**Depth to Water / Date and Time:**
Water Column:	27.50	FT.	5% = 1.37	
	(x) .163	GAL/FT.		
Well Volume:	4.5	GAL.		
Total Purge Vol.:		GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	33	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 1-13-10 Time: 1240 Method: Pump	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
	18.19	0.687	2.95	7.04	-60.0	12.0	7.81	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1100	1.0	17.89	0.597	2.49	7.51	49.8	226	7.87	Cloudy
1110	2.0	17.94	.629	2.81	7.29	-35.6	100	7.75	slightly cloudy
1120	3.0	17.97	.644	2.94	7.21	-50.3	70.0	7.82	"
1130	4.0	"	.658	3.00	7.15	-55.2	45.0	7.72	"
1140	5.0	18.02	.664	3.18	7.11	-54.9	37.0	7.81	clear
1150	6.0	18.05	.671	3.07	7.09	-56.3	27.0	7.78	"
1200	7.0	17.99	.675	3.04	7.07	-57.1	21.0	7.72	"
1210	8.0	18.04	.677	2.94	7.06	-58.5	18.0	7.74	"
1220	9.0	"	.681	2.87	"	-59.5	15.0	7.74	"
1230	10.0	18.14	.683	2.94	7.05	-59.4	13.0	7.71	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	~~1~~ 2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1040 Purge Rate: 0.1 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 1.2 mg/L

MS/MSD Duplicate ID No.:

Signature(s): Geoffrey Little

1240 11.0 18.19 .687 2.95 7.04 -60.0 12.0 7.81 clear

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MCAS New River
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: sunny - cold 40's

Project Number: 389017.FI.FS.86
Well ID: 1RB6 - MW 63 IW
Sample ID: 1RB6 - GW 63IW-09 D
Sampling Team: K. Howell

Total Depth: 54.85 FT.(BTOC)
Depth to water: (-) 7.16 FT.(BTOC)
Water Column: 47.69 FT.
(x) 0.16 GAL/FT.
Well Volume: 7.63 GAL.
Total Purge Vol.: 20 GAL.

Purge Device: QED Well wizard bladder

Pump Inlet Depth 49' FT.(BTOC)

Water Quality Meter: Solonist WLM / YSI 556
Depth to Water / Date and Time: 7.16 / 12-17-09

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12-17-09 Time: 1325	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: bladder	18.25	0.589	0.23	6.81	-88.6	43.9	7.46	clear/none

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0955	—	16.89	0.653	1.47	6.76	-62.3	—	7.32	cloudy/none
1000		17.34	0.628	0.97	6.79	-66.7	—	7.45	
1005		17.40	0.620	0.64	6.80	-65.8	1000	7.45	
1020	2.8	17.44	0.616	0.68	6.81	-60.5	895	7.46	
1025		17.37	0.612	0.54	6.81	-61.5	470	7.45	
1030		17.58	0.611	0.53	6.81	-61.3	360	7.45	
1040		17.62	0.608	0.49	6.81	-65.4	287	7.46	
1045		17.76	0.606	0.43	6.82	-67.5	240	7.46	
1050	6.23	17.73	0.603	0.43	6.82	-70.5	201	7.45	
1100		17.79	0.601	0.44	6.82	-88.5	173	7.45	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0950 Purge Rate: 0.4/0.5 L/min
Nitrate Ø mg/L
Nitrite Ø mg/L
Fe^{3+} mg/L

MS/MSD Duplicate ID No.:
Signature(s): K. Howell 12/17/09

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: MCAS New River
Event: Comprehensive Groundwater Sampling
Date: 12/17/09
Weather: Sunny/cold 40's

Project Number: 389017.FI.FS.86
Well ID: IR86-MW631N-0
Sample ID: IR86-GW631N-090
Sampling Team: KHowell

Total Depth: 54.85 FT.(BTOC)
Depth to water: (-) 7.16 FT.(BTOC)
Water Column: 47.69 FT.
(x) 0.16 GAL/FT.
Well Volume: 7.63 GAL.
Total Purge Vol.: 20 GAL.

Water Quality Meter: Solonist WLM/YSI556
Depth to Water / Date and Time: 7.16

Purge Device: QED well wizard bladder

Pump Inlet Depth 49' FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1110		17.82	0.598	0.42	6.82	-71.8	158	7.46	
1115		17.97	0.598	0.39	6.82	-71.6	141	7.46	
1120	9.5	18.00	0.596	0.37	6.82	-70.9	123	7.45	
1130		17.88	0.596	0.37	6.81	-70.3	106	7.45	
1150		17.85	0.597	0.41	6.83	-78.9	97.5	7.46	
1210		18.29	0.588	0.19	6.85	-90.2	240	7.46	*
1220		18.25	0.588	0.19	6.580	-90.5	207	7.45	
1230		18.17	0.589	0.27	6.84	-87.5	139	7.46	
1300		18.27	0.590	0.33	6.82	-86.0	83.7	7.45	
1320	20	18.25	0.589	0.23	6.81	-88.6	72.7	7.46	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 0950 Purge Rate: 0.4/0.5 L/min

Nitrate Ø mg/L
Nitrite Ø mg/L
Fe^{2+} 3.2 mg/L

* bumped line to pump - increase in turbidity almost instantly

MS/MSD Duplicate ID No.:

Signature(s): KHowell 12-17-09

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	B IR86-MW64-090
Event:	Comprehensive Groundwater Sampling	Sample ID:	IR86-GW64-090
Date:	12/16/09	Sampling Team:	M. SMITH / RDU
Weather:	SUNNY, 50's		

Total Depth:	35.00	FT.(BTOC)	Water Quality Meter:	YSI / 16004
Depth to water:	(-) 3.10	FT.(BTOC)	Depth to Water / Date and Time:	3.10 12/16/09 1415
Water Column:	31.90	FT.		
	(x) .163	GAL/FT.		
Well Volume:	5.1997	GAL. x 1		
Total Purge Vol.:	5.1997	GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	31.00	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	~~0.064~~
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1420	0.2	17.84	0.376	1.48	9.49	-113.7	>1000	3.20	
1425	0.5	18.01	0.379	0.62	9.33	-134.5	>1000	3.15	
1430	0.75	18.12	0.375	0.46	9.26	-141.7	>1000	3.20	
1435	1.1	18.16	0.370	0.43	9.20	-147.8	>1000	3.20	
1440	1.45	18.21	0.366	0.47	9.26	-154.4	1000	3.20	
1445	1.70	18.18	0.366	0.43	9.22	-155.1	800	3.20	
1450	2.05	18.35	0.366	0.42	9.13	-157.2	700	3.20	
1455	2.45	18.32	0.366	0.36	9.07	-164.0	650	3.20	
1500	2.85	18.33	0.363	0.32	8.98	-169.1	550	3.20	
1505	3.25	18.38	0.361	0.31	8.94	-176.4		3.20	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1415 Purge Rate: 300 ml/min

Nitrate_____ mg/L

Nitrite _____ mg/L

Fe2+ mg/L

MS/MSD YES Duplicate ID No.: NO

Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: SUNNY, 50's

Project Number: 389017.FI.FS.86
Well ID: IR86 - MW04
Sample ID: IR86-GW04-09D
Sampling Team: M.S./RDU

Total Depth: _____ FT.(BTOC)
Depth to water: (-) _____ FT.(BTOC)
Water Column: _____ FT.
(x) _____ GAL/FT.
Well Volume: _____ GAL.
Total Purge Vol.: _____ GAL.
Purge Device: _____
Pump Inlet Depth _____ FT.(BTOC)

PAGE 1

Water Quality Meter: _____
Depth to Water / Date and Time: PAGE 1

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:		PAGE 3						

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1510	3.65	18.37	0.359	0.31	8.89	-182.9	500	3.20	
1515	4.05	18.30	0.357	0.23	8.84	-188.9	400	3.20	
1520	4.45	18.37	0.356	0.25	8.79	-191.5	360	3.20	
1525	4.85	18.30	0.356	0.26	8.78	-194.3	330	3.20	
1530	5.25	18.89	0.354	0.28	8.75	-199.1	270	3.20	
1535	5.65	18.87	0.356	0.15	8.74	-200.1	230	3.20	
1540	6.05	18.86	0.354	0.26	8.70	-199.6	230	3.20	
1545	6.45	18.25	0.353	0.24	8.65	-197.9	160	3.20	
1550	6.85	18.23	0.352	0.26	8.60	-200.1	120	3.20	
1555	7.25	18.24	0.353	0.24	8.60	-202.0	110	3.20	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: _____ Purge Rate: _____

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe2+ _____ g/l

MS/MSD YES
Duplicate ID No.: NO
Signature(s): [signature]

CH2MHILL

3 of 3

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location:
Event: Comprehensive Groundwater Sampling
Date: 12/16/09
Weather: SUNNY, 50'S

Project Number: 389017.FI.FS.86
Well ID: IR86-MW64
Sample ID: IR86-GW64-090
Sampling Team: M.S. / RDU

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.
Purge Device:
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: PAGE 2
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

PAGE

SAMPLE DATA

Date: 12/16/09 Time: 1630	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	18.23	0.349	0.23	8.45	-204.2	40.0		

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1600	1.65	18.22	0.352	0.25	8.58	-205.6	85.0	3.20	
1605	8.05	18.22	0.351	0.24	8.55	-204.9	75.0	3.20	
1610	8.45	18.17	0.351	0.24	8.54	-204.0	60.0	3.20	
1615	8.85	18.18	0.350	0.23	8.51	-204.2	55.0	3.20	
1620	9.25	18.20	0.350	0.22	8.50	-204.8	50.0	3.20	
1625	9.65	18.23	0.350	0.24	8.48	-205.1	45.0	3.20	
1630	~~10.05~~	18.23	0.349	0.23	8.45	-204.2	40.0	3.20	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Metals by EPA Method 6010B	HNO_3	500 ml poly bottle	1
SVOCs, PAHs EPA Method 8270C	None	1 Liter Ambers	2
Pesticides/PCBs SW-846	None	1 Liter Ambers	2

Observations/Notes: Purge Start Time: 1415 Purge Rate: 300-ml/min
Nitrate 0.0 mg/L
Nitrite 0.0 mg/L
Fe^{2+} 0.0 mg/L

MS/MSD YES Duplicate ID No.: NO
Signature(s):

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	IRSG MW05
Event:	Comprehensive Groundwater Sampling	Sample ID:	IRSG-MW05-10A
Date:	3/24/10	Sampling Team:	M SM. TH / RDU
Weather:	SUNNY 60'S		

Total Depth:	20	FT.(BTOC)	Water Quality Meter:	YSI / HANNA
Depth to water:	(-) ~~6.80~~	FT.(BTOC) 6.20	Depth to Water / Date and Time:	~~6.80~~ 3/23/10 1120 6.20
Water Column:	~~13.2~~	FT. 13.8		
	(x) .163	GAL/FT.		
Well Volume:	~~2.17~~	GAL. ~~2.04~~ 2.57		
Total Purge Vol.:		GAL.		
Purge Device:	BLADDER PUMP			
Pump Inlet Depth	15	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

MFE:
SAMP. VOC
DUP.
EB:

SAMPLE DATA

Date: 3/24/10 Time: 1215	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	17.76	.113	1.61	5.96	35.7	6.80	6.33	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1130	.3	17.79	.200	15.23	7.55	106.9	38.0	6.26	
1135	1	17.63	.159	2.45	6.63	59.7	20.0	6.30	
1140	1.5	17.64	.150	2.23	6.44	53.8	16.0	6.30	
1145	2.0	17.63	.142	2.02	6.27	47.4	13.0	6.32	
1150	2.5	17.63	.133	1.88	6.15	43.2	12.0	6.33	
1155	3.0	17.63	.128	1.77	6.08	39.8	11.0	6.33	
1200	3.5	17.68	.124	1.74	6.05	37.4	9.50	6.33	
1205	4.0	17.74	.118	1.69	5.97	35.5	7.80	6.33	
1210	4.5	17.70	.114	1.67	5.99	35.0	7.00	6.33	
1215	5.0	17.76	.113	1.61	5.96	35.7	6.80	6.33	

	Analysis	Preservative	Container requirements	No. of containers
✓	TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
✓	Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
✓	Sulfide 376.2	NaOH	500 ml poly bottle	1
✓	Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
✓	Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
✓	Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1125 Purge Rate: ~300 ml/min

Nitrate _____ mg/L
Nitrite _____ mg/L
Fe^{2+} _____ mg/L

DIO = 0.0 PPM THROUGHOUT SAMPLING

MS/MSD ~~X~~ NONE (MS) Duplicate ID No.: ~~IRSG-MW05-10A~~ MS

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Project Number: 389017.FI.FS.86
Location: Site 86
Well ID: IR86-MW66IW
Event: Comprehensive Groundwater Sampling
Sample ID: IR86-GW66IW-10B
Date: 6/28/10
Sampling Team: D. Brown / CLT
Weather: 70° sunny

Total Depth: 55.0 FT.(BTOC) Packer set 45' bgs
Depth to water: (-) 5.56 FT.(BTOC)
Water Column: 10.0 FT. so 10' water column.
(x) 0.163 GAL/FT.
Well Volume: 1.63 GAL. x3 = 4.89
Total Purge Vol.: GAL.

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.56 6/28/10 0730

Purge Device: Bladder Pump

Pump Inlet Depth 50 FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 2

SAMPLE DATA

Date: 6/28/10 Time: 0845	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: low flow	18.6	.692	.77	6.81	13	5.1	5.61	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0725	.3	19.1	.731	4.31	6.89	37	133	5.57	Clear, no odor
0730	.75	19.1	.730	4.10	6.91	21	125	5.57	
0735	1.15	19.1	.721	3.13	6.78	24	138	5.56	
0740	1.40	19.0	.703	3.01	6.75	20	130	5.58	
0745	1.75	18.7	.691	2.97	6.81	17	115	5.58	
0750	2.10	18.6	.690	2.10	6.80	5	89	5.58	
0755	2.45	18.6	.691	1.83	6.71	12	93	5.57	
0800	2.90	18.6	.692	.97	6.75	13	97	5.59	
0805	3.15	18.7	.692	.98	6.76	8	58	5.60	
0810	3.45	18.7	.691	.81	6.75	4	41	5.60	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK-175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	~~H_2SO_4~~	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	~~HNO_3~~	~~250 ml poly bottle~~	~~1~~

Observations/Notes:
Purge Start Time: 0720
Purge Rate: 0.3 L/min
Nitrate _____ mg/L
Nitrite _____ mg/L

Used Packer to seal off the well. Packer set @ 45' bgs.

MS/MSD Yes
Duplicate ID No.: Yes IR86-GW66IWD-10B
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 6/28/10
Weather: 70° Sunny

Project Number: 389017.FI.FS.86
Well ID: IR86-MW66IW
Sample ID: IR86-GW66IW-10B
Sampling Team: D. Brown/CLT

Total Depth: 55.0 FT.(BTOC)
Depth to water: (-) 5.56 FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: See GAL.
Total Purge Vol.: GAL.
Purge Device: Sheet 1
Pump Inlet Depth FT.(BTOC)

Water Quality Meter: YSI 556
Depth to Water / Date and Time: 5.56 6/28/10 0730

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 2

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	±3%	±10%	±0.1	±10 mv	<10		
0815	3.85	18.7	.690	.75	6.75	12	38	5.60	Clear, no odor
0820	4.15	18.6	.693	.78	6.81	5	27	5.66	
0825	4.45	18.6	.692	.79	6.80	11	21	5.60	
0830	4.83	18.6	.690	.75	6.79	12	19	5.61	
0835	5.35	18.6	.691	.76	6.81	17	12	5.61	
0840	5.70	18.6	.693	.77	6.80	13	8.3	5.61	
0845	5.95	18.6	.692	.77	6.81	13	5.1	5.61	

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
~~Methane, Ethane, Ethene RSK 175~~	~~HCL~~	~~40 ml glass vials~~	~~2~~
~~Sulfide 376.2~~	~~NaOH~~	~~500 ml poly bottle~~	~~1~~
~~Alkalinity, Chloride, Sulfate 310.1 and 300.0~~	~~None~~	~~500 ml poly bottle~~	~~1~~
~~Total Organic Carbon by EPA Method 415.2~~	~~H_2SO_4~~	~~250 ml poly bottle~~	~~2~~
~~Iron and Manganese by EPA Method 6010B~~	~~HNO_3~~	~~250 ml poly bottle~~	~~1~~

Observations/Notes: Purge Start Time: 0720 Purge Rate: 0.3 L/min
Nitrate_____ mg/L
Nitrite _____ mg/L

MS/MSD Yes Duplicate ID No.: IR86-GW66IWD-10B
Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: SWMU 318-MW01
Sample ID: SWMU 318-GW01-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.85 FT.(BTOC)
Depth to water: (-) 3.70 FT.(BTOC)
Water Column: 26.15 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.26 GAL. x 3 = 12.8
Total Purge Vol.: ~15 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI 556 # 06309
Depth to Water / Date and Time: 3.70 12/10/09 0935

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

3
3
3

Page 1 of 3

SAMPLE DATA

Date: 12/10/09 Time: 1125 Method: Low Flow	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
		—	—	see	pg	3	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0940	< 3/4	22.89	0.290	0.71	5.76	-19.9	24.0	5.75	Clear / Slight Odor
0945	~1 1/4	22.99	0.300	0.45	5.73	-30.1	36.1	5.90	Clear
0950	~1 3/4	23.15	0.298	0.41	5.76	-48.2	29.7	6.20	Clear
0955	> 2	23.18	0.285	0.38	5.77	-54.6	29.2	6.30	Clear
1000	~2 3/4	23.31	0.325	0.36	5.77	-58.8	35.0	6.69	Clear
1005	> 3 1/4	23.38	0.339	0.37	5.79	-63.8	33.9	6.90	Clear
1010	~4	23.29	0.294	0.38	5.80	-67.7	33.8	6.85	Clear
1015	< 4 3/4	23.27	0.277	0.29	5.81	-70.9	28.2	6.97	Clear
1020	> 5 1/4	23.23	0.281	0.26	5.81	-74.9	24.9	7.01	Clear
1025	> 5 3/4	23.25	0.276	0.26	5.82	-79.2	21.9	6.98	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 5.8 mg/L

Purge Start Time: 0934
Purge Rate: ~0.4 L/min

0938 turned flow rate down to avoid drawdown
Verified flow rate at 0945, < .3 L/min, turned pump up ~0.35 L/min
Drawdown > 5%, switch to 3 well vol. method - pump turned up at 0958 (~ 0.5 L/min)

MS/MSD —
Duplicate ID No.: SWMU 318-GW01D-09D (YES)
Signature(s): Kelley A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: SWMU 318 - MW01
Sample ID: SWMU 318 - GW01 - 09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.85 FT.(BTOC)
Depth to water: (-) 3.70 FT.(BTOC)
Water Column: 26.15 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.26 GAL. x 3 = 12.8
Total Purge Vol.: ~15 GAL.

Purge Device: Bladder Pump
Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI 556 #06309
Depth to Water / Date and Time: 3.70 12/10/09 0935

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 3

SAMPLE DATA

Date: 12/10/09 Time: 1125	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	—	—	see pg 3			—		

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1030	~6 1/2	23.30	0.279	0.24	5.81	-82.0	19.5	6.99	Clear
1035	~7 1/4	23.41	0.287	0.21	5.82	-85.3	18.7	7.01	Clear
1040	~7 3/4	23.48	0.286	0.19	5.82	-87.3	15.8	7.01	Clear
1045	~8 1/2	23.49	0.286	0.20	5.82	-90.8	13.5	7.01	Clear
1050	~9	23.49	0.280	0.20	5.82	-93.0	12.5	6.98	Clear
1055	~9 3/4	23.33	0.291	0.20	5.83	-96.1	11.5	7.01	Clear
1100	~10 1/4	23.29	0.328	0.20	5.83	-97.8	10.1	7.00	Clear
1105	~10 3/4	23.32	0.304	0.19	5.82	-99.0	9.77	6.91	Clear
1110	>11 1/2	23.30	0.405	0.20	5.82	-101.0	9.34	7.01	Clear
1115	~12 1/4	23.60	0.406	0.18	5.83	-101.9	8.26	7.00	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0934 Purge Rate: see pg 1
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 5.8 mg/L

see notes on pg 1

MS/MSD — Duplicate ID No.: SWMU 318 - GW01D - 09D (YES)
Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/10/09
Weather: 58°, P. Cloudy

Project Number: 389017.FI.FS.86
Well ID: SWMU 318 - MW01
Sample ID: SWMU 318 - GW01 - 09D
Sampling Team: K. Ramsey / CLT

Total Depth: 29.85 FT.(BTOC)
Depth to water: (-) 3.70 FT.(BTOC)
Water Column: 26.15 FT.
(x) 0.163 GAL/FT. x3 = 12.8
Well Volume: 4.26 GAL.
Total Purge Vol.: ~15 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI 556 #06309
Depth to Water / Date and Time: 3.70 12/10/09 0935

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 3 of 3

SAMPLE DATA

Date: 12/10/09 Time: 1125	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	23.53	0.407	0.18	5.83	-105.4	7.68	7.01	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1120	<12¾	23.51	0.406	0.18	5.83	-104.2	7.33	6.99	Clear
1125	>13	23.53	0.407	0.18	5.83	-105.4	7.68	7.01	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	2
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 0934 Purge Rate: see pg 1

Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 5.8 mg/L

see notes on pg 1
Nitrate = 0 x 4.4 = 0 mg/L
Nitrite = 0 x 3.3 = 0 mg/L

MS/MSD —— Duplicate ID No.: SWMU 318 - GW01D - 09D (YES)

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/9/09
Weather: 65°, overcast, breezy

Project Number: 389017.FI.FS.86
Well ID: USTAS4105-MW02
Sample ID: USTAS4105-GW02-09D
Sampling Team: K. Tymrak / NWO

Total Depth: 20.0 FT.(BTOC)
Depth to water: (-) 3.61 FT.(BTOC)
Water Column: 16.39 FT.
(x) 0.163 GAL/FT.
Well Volume: 2.67 GAL.
Total Purge Vol.: 7.9 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 15' FT.(BTOC)

Water Quality Meter: YSI Pro # 14218, Hanna H08988
Depth to Water / Date and Time:

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/9/09 Time: 1405	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	20.57	0.242	0.40	6.14	-17.1	28.0	3.65	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1250	0.3	20.60	0.256	0.90	6.22	-17.9	60.0	3.65	clear
1255	0.5	20.58	0.254	0.69	6.20	-23.6	50.0	3.65	clear
1300	1.0	20.60	0.251	0.52	6.18	-18.7	45.0	3.66	"
1305	1.45	20.55	0.251	0.48	6.18	-20.2	40.0	3.64	"
1310	1.90	20.51	0.248	0.47	6.16	-18.2	37.0	3.65	"
1315	2.35	20.57	0.245	0.45	6.16	-14.7	37.0	3.65	"
1320	2.80	20.60	0.244	0.44	6.17	-20.2	35.0	3.64	"
1325	3.3	20.61	0.243	0.44	6.16	-15.8	35.0	3.63	"
1330	3.75	20.65	0.243	0.43	6.16	-24.0	35.0	3.65	"
1335	4.10	20.60	0.244	0.44	6.15	-18.9	34.0	3.64	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1240 Purge Rate: 0.35 mL/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 4.8 mg/L

MS/MSD —
Duplicate ID No.: —
Signature(s): [illegible]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/9/09
Weather:

Project Number: 389017.FI.FS.86
Well ID: UST A5418S- MW02
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: FT.(BTOC)
Depth to water: (-) FT.(BTOC)
Water Column: FT.
(x) GAL/FT.
Well Volume: GAL.
Total Purge Vol.: GAL.

see other sheet

Water Quality Meter:
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1340	4.90	20.54	0.242	0.42	6.15	-21.4	33.0	3.64	clear
1345	5.30	20.57	0.241	0.41	6.15	-18.3	32.0	3.64	"
1350	6.0	20.55	0.241	0.40	6.14	-15.2	31.0	3.65	"
1355	6.70	20.56	0.240	0.41	6.15	-18.1	29.0	3.64	"
1400	7.30	20.55	0.241	0.42	6.13	-16.3	28.0	3.65	"
1405	7.90	20.57	0.242	0.40	6.14	-17.1	28.0	3.65	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: Purge Rate:

Nitrate _____ mg/L

Nitrite _____ mg/L

Fe

MS/MSD Duplicate ID No.:

Signature(s): Heather Tuple

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/12/09
Weather: 45°, overcast

Project Number: 389017.FI.FS.86
Well ID: ~~A86-1~~ SWMU318-MW05
Sample ID: SWMU318-GW05-09D
Sampling Team: K. Tymrak / NWD

Total Depth: 30.25 FT.(BTOC)
Depth to water: (-) 3.45 FT.(BTOC) 3.75 on 12/13/09
Water Column: 26.8 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.37 GAL.
Total Purge Vol.: 13.3 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth 25 FT.(BTOC)

Water Quality Meter: YSI #14128, Hanna #08988
Depth to Water / Date and Time: 12/12/09 @ 1550 3.45' btoc

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: 12/13/09 Time: 0925	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Bladder Pump	21.95	0.359	0.22	4.36	-49.3	3.00	5.67	clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1600	0.8	20.63	0.368	0.67	5.61	22.3	25.0	4.70	clear
1605	1.2	21.35	0.361	0.54	5.27	12.1	20.0	5.13	"
1615	2.5	21.61	0.359	0.20	4.87	-21.8	4.70	5.70	"
1625	3.8	21.70	0.354	0.18	4.71	-35.8	2.10	5.80	"
1635	5.1	21.71	0.358	0.26	4.51	-39.9	2.20	5.80	"
1645	6.4	21.73	0.358	0.24	4.51	-48.3	2.10	5.80	"
1655	7.7	21.69	0.360	0.25	4.45	-53.0	2.00	5.85	"
12/13/09 0850	9.0	21.89	0.356	0.33	4.52	-42.8	3.00	5.60	"
0900	10.3	21.91	0.357	0.25	4.43	-45.4	2.50	5.65	"
0910	11.6	21.95	0.358	0.23	4.39	-47.4	2.10	5.67	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes:
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 1.8 mg/L

Purge Start Time: 1550
restart @ 0840 on 12/13/09

Purge Rate: 0.5 L/min @ 1605
- need 3 well volumes

MS/MSD —
Duplicate ID No.: —
Signature(s): [signature]

CH2MHILL

Page 2 of 2

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/13/09
Weather: 50°, rain

Project Number: 389017.FI.FS.86
Well ID: SWMU318-MW05
Sample ID:
Sampling Team: K. Tymrak / NWO

Total Depth: ____ FT.(BTOC)
Depth to water: (-) ____ FT.(BTOC)
Water Column: ____ FT.
(x) ____ GAL/FT.
Well Volume: ____ GAL.
Total Purge Vol.: ____ GAL.

See page 1

Water Quality Meter: YSI #14128, Hanna #08988
Depth to Water / Date and Time:

Purge Device:

Pump Inlet Depth ____ FT.(BTOC)

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:								

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
0930	12.9	21.95	0.359	0.23	4.37	-49.4	3.00	5.67	clear
0935	13.3	21.95	0.359	0.22	4.36	-49.3	3.00	5.67	"

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
~~Metals by~~ EPA Method 6010B Fe & Mn only	HNO_3	250 ~~500~~ ml poly bottle	1
~~SVOCs, PAHs EPA Method 8270C~~	~~None~~	~~1 Liter Ambers~~	~~2~~
~~Pesticides/PCBs SW-846~~	~~None~~	~~1 Liter Ambers~~	~~2~~

Observations/Notes: Purge Start Time: ____ Purge Rate: ____

Nitrate ____ mg/L

Nitrite ____ mg/L

Fe

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/8/09
Weather: 55°, Cloudy

Project Number: 389017.FI.FS.86
Well ID: SWMU 318 - MW08
Sample ID: SWMU 318 - GW08 - 09D
Sampling Team: K. Ramsey / CLT

Total Depth: 30.00 FT.(BTOC)
Depth to water: (-) 4.26 FT.(BTOC)
Water Column: 25.74 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.2 GAL.
Total Purge Vol.: ~16 GAL.

Purge Device: Bladder Pump
Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 4.26 12/8/09 1030

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 1 of 3

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	—	—	see	pg	3	—	—	

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1040	< 1/2	21.57	0.671	1.31	6.73	-67.1	168	4.31	Brown/Reddish, Cloudy
1045	~1	21.85	0.673	0.66	6.72	-83.0	134	4.30	Brown/Reddish, Cloudy
1050	~1 1/4	21.89	0.670	0.49	6.75	-97.2	118	4.30	Cloudy
1055	~1 3/4	21.84	0.587	0.35	6.77	-106.0	101	4.30	Cloudy
1100	< 2 1/4	21.89	0.576	0.31	6.77	-109.8	91.8	4.35	Cloudy
1105	> 2 1/2	21.99	0.578	0.28	6.77	-112.9	86.0	4.30	Cloudy
1110	> 3	22.01	0.552	0.27	6.77	-114.3	82.2	4.29	Cloudy
1115	> 3 1/2	21.94	0.548	0.25	6.77	-115.7	80.5	4.31	Cloudy
1120	~3 3/4	21.94	0.547	0.24	6.77	-116.3	72.1	4.30	Cloudy
1125	~4 1/4	21.95	0.555	0.24	6.77	-117.3	69.0	4.30	Cloudy

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1033 Purge Rate: ~0.35 L/min
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.2

1041 turned purge rate up to achieve .3-.5 L/min

Nitrate 0 x 4.4 = 0
Nitrite 0 x 3.3 = 0

MS/MSD — Duplicate ID No.: —

Signature(s): Kelly A Ramsey

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client:	NAVFAC Mid-Atlantic	Project Number:	389017.FI.FS.86
Location:	Site 86	Well ID:	~~SWMU~~ SWMU 318-MW08
Event:	Comprehensive Groundwater Sampling	Sample ID:	SWMU 318-GW08-09D
Date:	12/8/09	Sampling Team:	K. Ramsey / CLT
Weather:	55, cloudy		

Total Depth:	30.00	FT.(BTOC)	Water Quality Meter:	YSI # 06309
Depth to water:	(-) 4.26	FT.(BTOC)	Depth to Water / Date and Time:	4.26 12/8/09 1030
Water Column:	25.74	FT.		
	(x) 0.163	GAL/FT.		
Well Volume:	4.2	GAL.		
Total Purge Vol.:	~16	GAL.		
Purge Device:	Bladder Pump			
Pump Inlet Depth	~25	FT.(BTOC)		

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 2 of 3

SAMPLE DATA

Date: / Time:	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method:	—	—	see	pg	3	—	—	—

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1130	~4 3/4	21.90	0.562	0.21	6.77	-118.1	55.0	4.29	Clear
1135	>5	21.97	0.569	0.20	6.77	-118.8	56.4	4.30	Clear
1140	>5 1/2	21.96	0.556	0.20	6.77	-118.9	47.8	4.30	Clear
1145	>6	21.92	0.561	0.19	6.77	-119.4	44.1	4.30	Clear
1150	>6 1/2	21.93	0.561	0.20	6.76	-120.0	42.4	4.30	Clear
1155	>6 3/4	21.88	0.562	0.19	6.77	-120.5	39.4	4.30	Clear
1200	7	21.88	0.572	0.18	6.76	-121.2	33.8	4.30	Clear
1210	~8 1/2	21.85	0.574	0.17	6.77	-122.8	28.8	4.29	Clear
1320 *	~8 3/4	20.96	0.544	0.40	6.74	-93.4	61.6	4.29	Clear
1325	~9 1/4	21.85	0.568	0.20	6.75	-104.1	19.8	4.28	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1033 Purge Rate: ~0.35 L/min

Nitrate 0 mg/L

Nitrite 0 mg/L

Fe 2.2

1041 turned purge rate up to achieve .3-.5 L/min

Nitrate 0 x 4.4 = 0

Nitrite 0 x 3.3 = 0

MS/MSD —	Duplicate ID No.: —
Signature(s): Kelly A Ramsey	

* 1210 purge stopped to help K. Tymrak setup at IR86-MW53, resumed at 1315

CH2MHILL

GROUNDWATER SAMPLING DATA SHEET

Client: NAVFAC Mid-Atlantic
Location: Site 86
Event: Comprehensive Groundwater Sampling
Date: 12/8/09
Weather: 55°, Cloudy

Project Number: 389017.FI.FS.86
Well ID: SWMU 318 - MW08
Sample ID: SWMU 318-GW08-09D
Sampling Team: K. Ramsey / CLT

Total Depth: 30.00 FT.(BTOC)
Depth to water: (-) 4.26 FT.(BTOC)
Water Column: 25.74 FT.
(x) 0.163 GAL/FT.
Well Volume: 4.2 GAL.
Total Purge Vol.: ~16 GAL.

Purge Device: Bladder Pump

Pump Inlet Depth ~25 FT.(BTOC)

Water Quality Meter: YSI # 06309
Depth to Water / Date and Time: 4.26 12/8/09 1030

Well Dia. (inches)	Volume (gallons/foot)
1	0.041
1.25	0.064
2	0.163
4	0.653
6	1.469

Page 3 of 3

SAMPLE DATA

Date: 12/8/09 Time: 1415	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Method: Low Flow	21.85	0.567	0.15	6.72	-119.4	9.63	4.30	Clear

FIELD PARAMETERS

Time	Purge Vol. (gals)	Temp. °C	Cond. mS/cm	DO mg/L	pH SU	ORP mV	Turbidity NTU	Depth to water (ft bgs)	Color / Odor / Comments
Stabilization Criteria		constant	± 3%	± 10%	± 0.1	± 10 mv	<10		
1330	~9 3/4	21.84	0.565	0.18	6.75	-109.2	14.8	4.25	Clear
1335	>10	21.88	0.565	0.16	6.74	-111.4	13.0	4.30	Clear
1340	>10 1/2	21.86	0.567	0.15	6.76	-114.1	12.2	4.25	Clear
1345	~11	21.85	0.568	0.15	6.78	-117.4	12.7	4.30	Clear
1350	~11 1/2	21.85	0.566	0.15	6.76	-119.1	12.5	4.30	Clear
1355	~11 3/4	21.83	0.565	0.15	6.75	-119.4	12.7	4.30	Clear
1400	>12	21.88	0.565	0.15	6.76	-119.7	11.4	4.30	Clear
1405	>12 1/2	21.85	0.563	0.15	6.77	-120.4	11.8	4.26	Clear
1410	~13	21.86	0.566	0.16	6.76	-121.5	10.9	4.30	Clear
1415	>13 1/4	21.85	0.567	0.15	6.72	-119.4	9.63	4.30	Clear

Analysis	Preservative	Container requirements	No. of containers
TCL VOCs by EPA Method 8260B	Hcl	40 ml glass vials	3
Methane, Ethane, Ethene RSK-175	HCL	40 ml glass vials	2
Sulfide 376.2	NaOH	500 ml poly bottle	1
Alkalinity, Chloride, Sulfate 310.1 and 300.0	None	500 ml poly bottle	1
Total Organic Carbon by EPA Method 415.2	H_2SO_4	250 ml poly bottle	~~2~~ 1
Iron and Manganese by EPA Method 6010B	HNO_3	250 ml poly bottle	1

Observations/Notes: Purge Start Time: 1033 Purge Rate: ~0.35 L/min

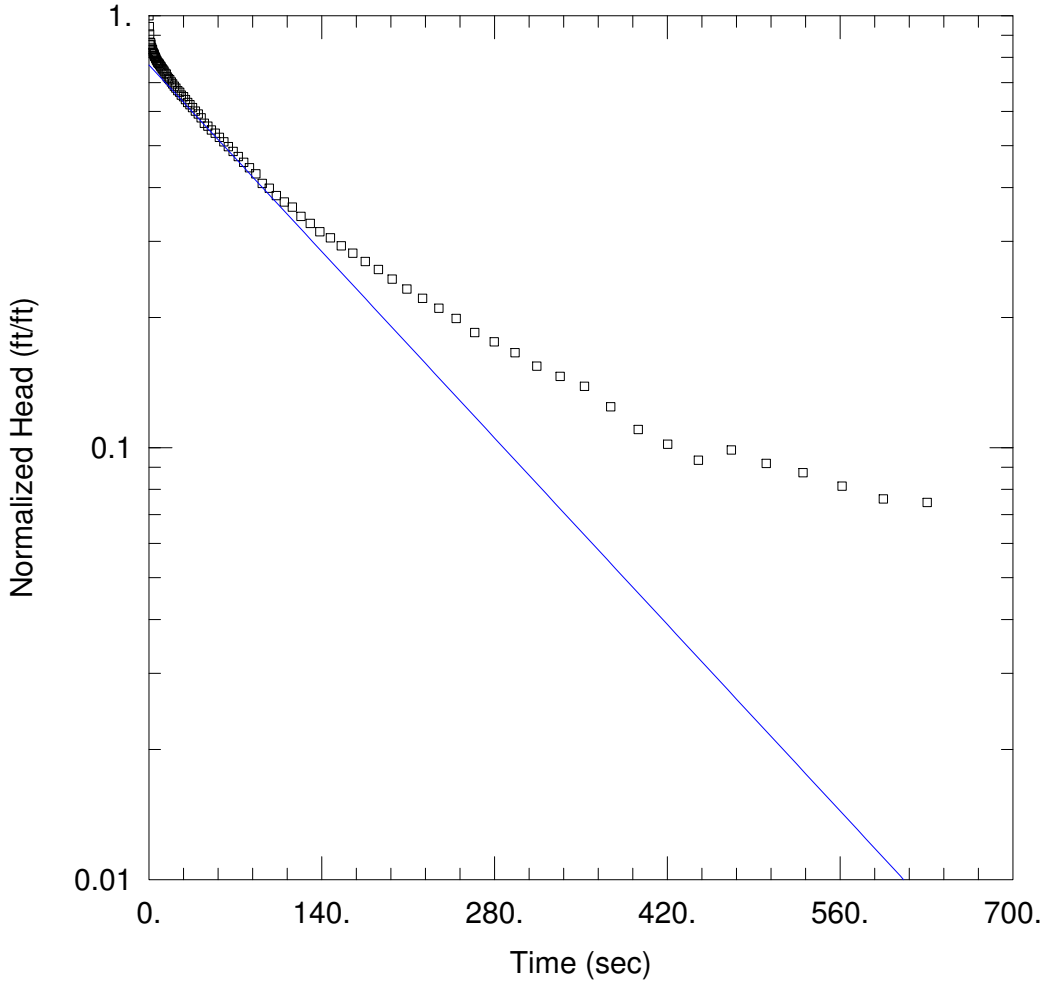
Nitrate 0 mg/L
Nitrite 0 mg/L
Fe 2.2 mg/L

Nitrate 0 x 4.4 = 0
Nitrite 0 x 3.3 = 0

MS/MSD —— Duplicate ID No.: ——

Signature(s): Kelly A Ramsey

Appendix D
Slug Test and Pump Test Data



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_RH1.aqt
Date: 07/19/10 Time: 15:57:29

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft
Anisotropy Ratio (Kz/Kr): 1.

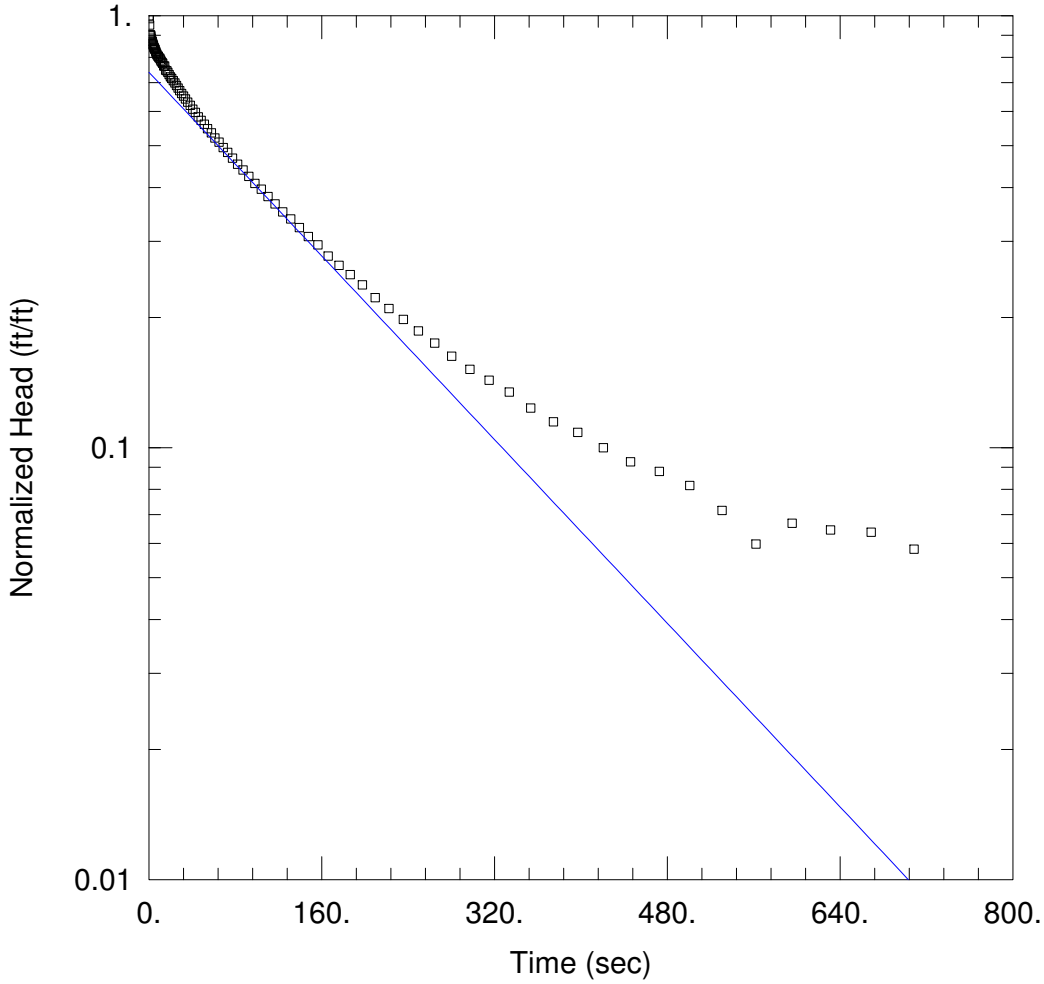
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft
Total Well Penetration Depth: 36.3 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 36.3 ft
Screen Length: 5. ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.462 ft/day
y0 = 0.7684 ft



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_RH2.aqt
Date: 07/19/10 Time: 15:58:02

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

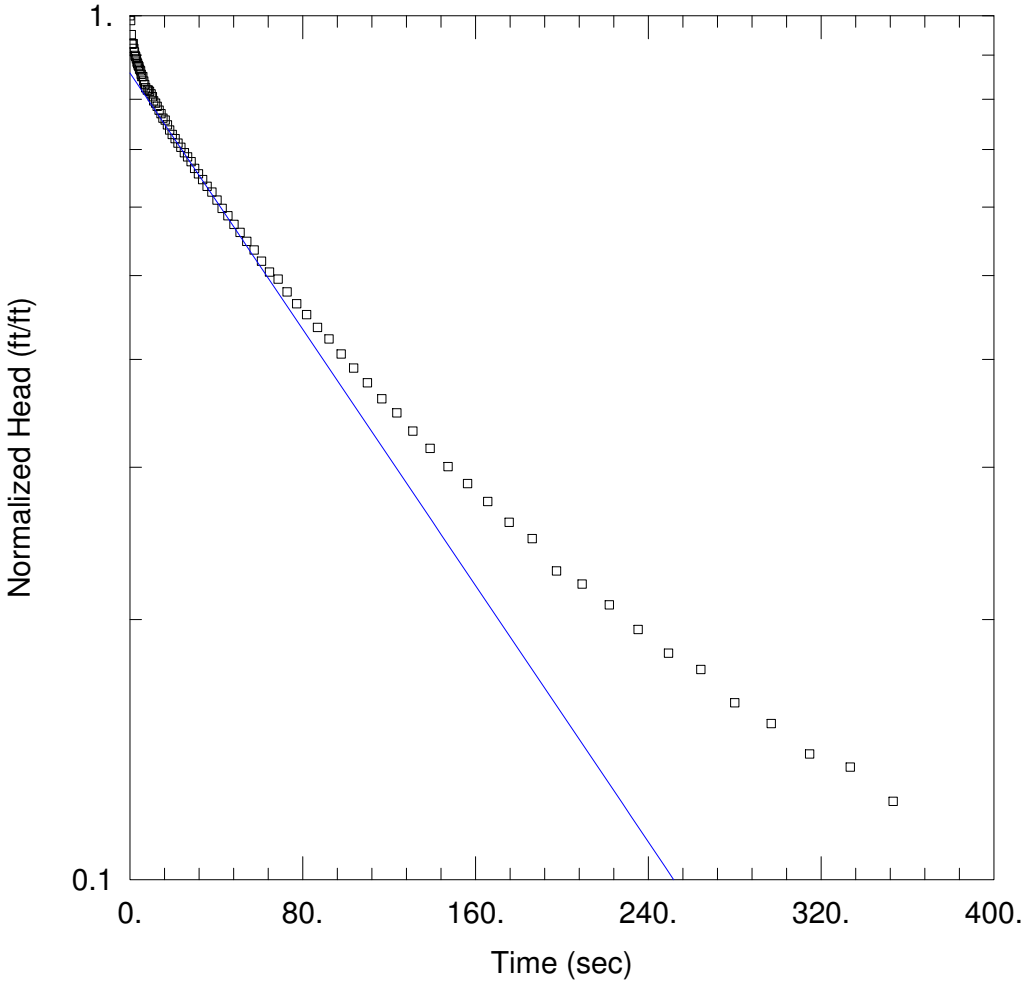
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft Static Water Column Height: 36.3 ft
Total Well Penetration Depth: 36.3 ft Screen Length: 5. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.26 ft/day y0 = 0.7393 ft



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_RH3.aqt
Date: 07/19/10 Time: 15:58:25

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft
Anisotropy Ratio (Kz/Kr): 1.

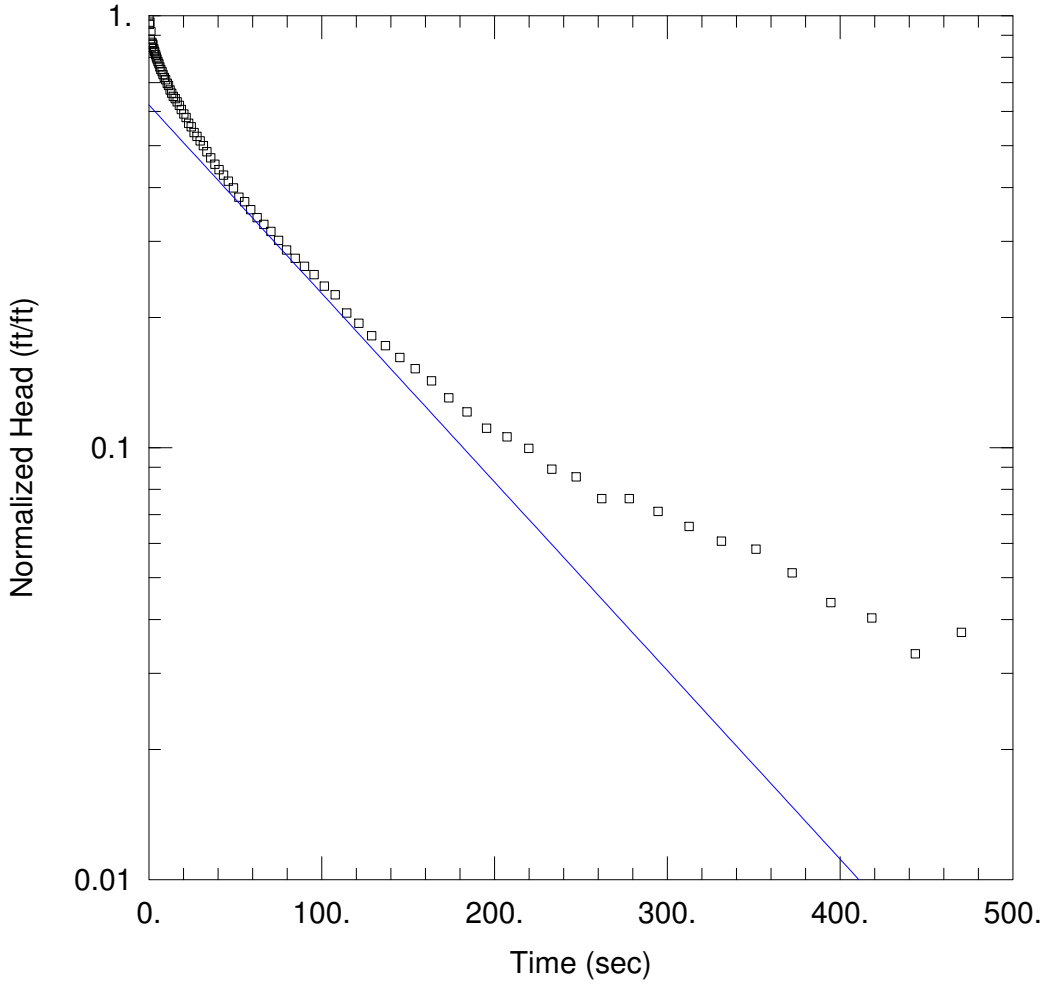
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft
Static Water Column Height: 36.3 ft
Total Well Penetration Depth: 36.3 ft
Screen Length: 5. ft
Casing Radius: 0.0833 ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.758 ft/day
y0 = 0.8581 ft



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_FH1.aqt
Date: 07/19/10 Time: 15:55:51

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

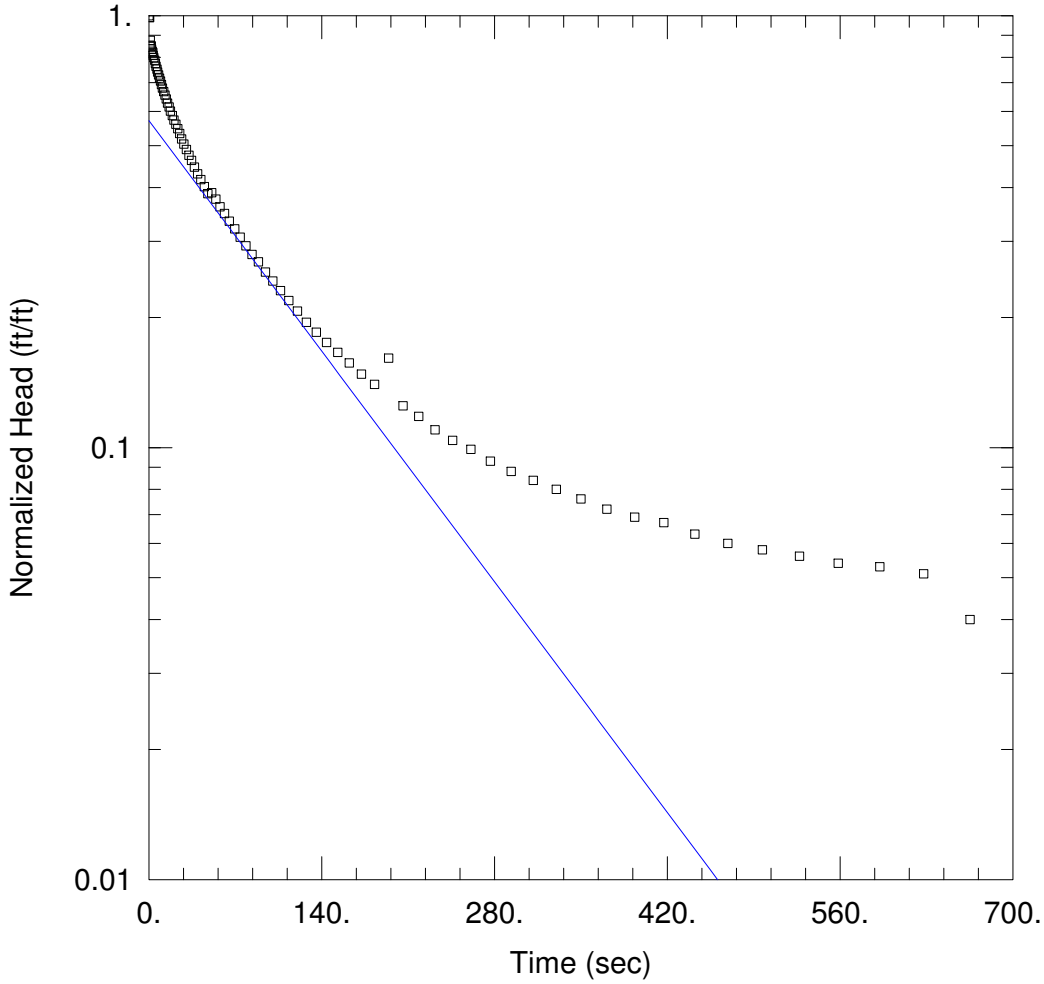
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft Static Water Column Height: 36.3 ft
Total Well Penetration Depth: 36.3 ft Screen Length: 5. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.069 ft/day y0 = 0.6211 ft



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_FH2.aqt
Date: 07/19/10 Time: 15:56:32

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

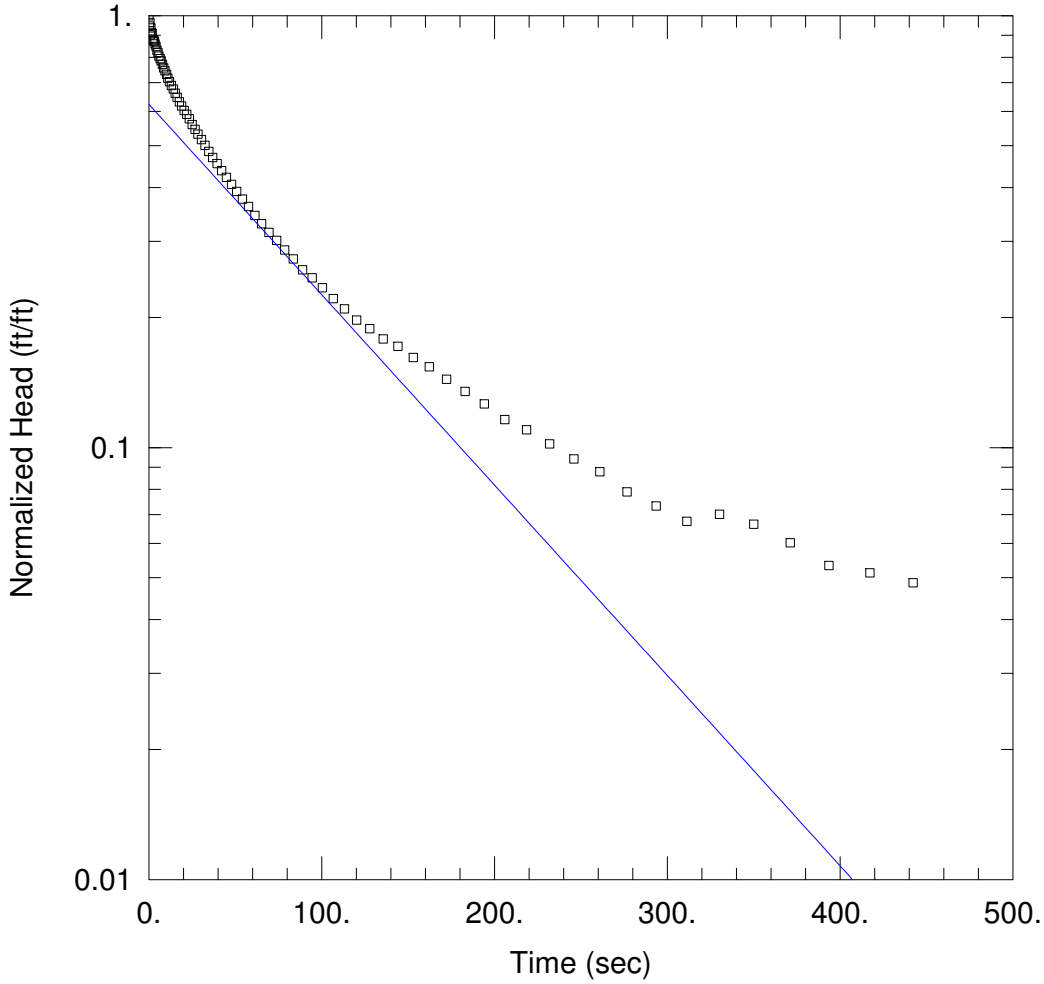
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft Static Water Column Height: 36.3 ft
Total Well Penetration Depth: 36.3 ft Screen Length: 5. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.808 ft/day y0 = 0.5713 ft



WELL TEST ANALYSIS

Data Set: \...\IR86_MW38IWC_FH3.aqt
Date: 07/19/10 Time: 15:56:59

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW38IWC
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft
Anisotropy Ratio (Kz/Kr): 1.

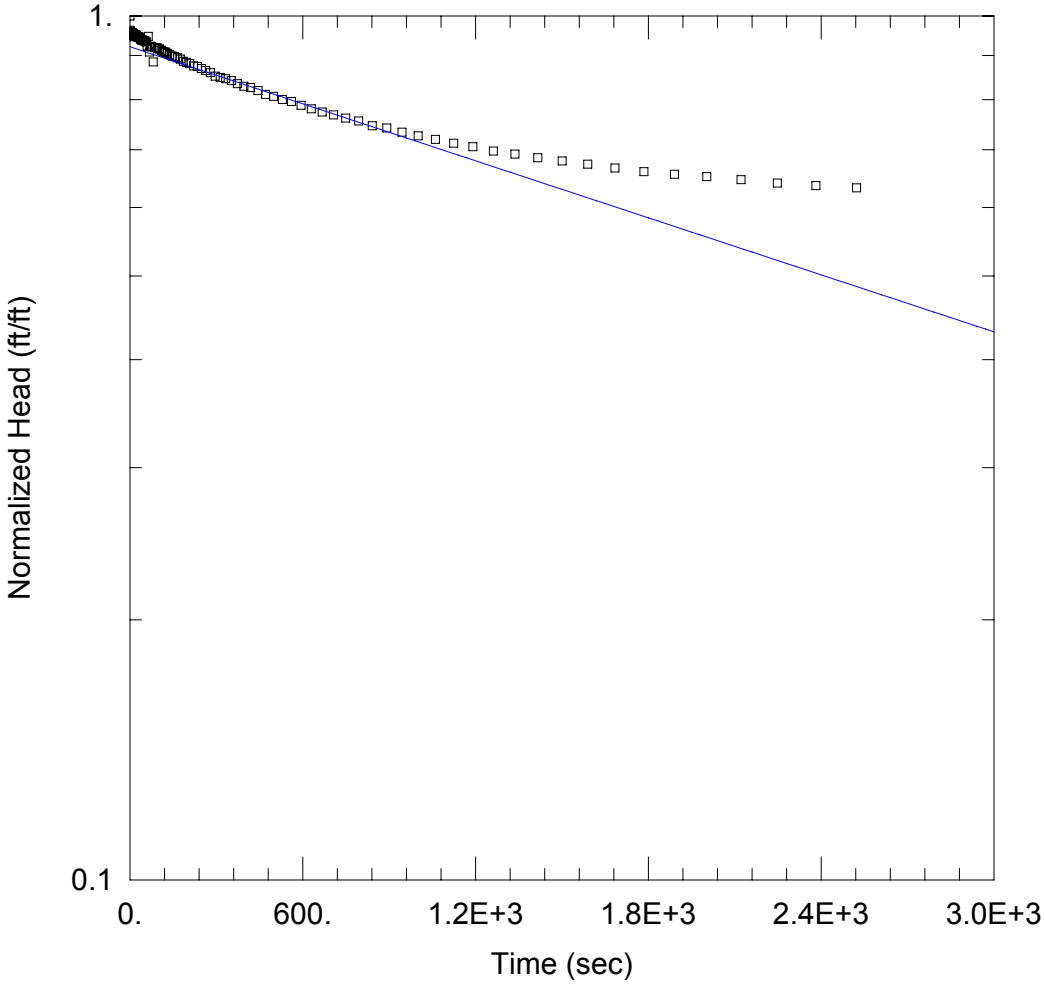
WELL DATA (IR86-MW38IWC)

Initial Displacement: 1. ft
Total Well Penetration Depth: 36.3 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 36.3 ft
Screen Length: 5. ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.089 ft/day
y0 = 0.6229 ft



WELL TEST ANALYSIS

Data Set: P:\...\IR86_MW44DW_Air_RH1.aqt
Date: 11/19/08 Time: 10:03:21

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW44DW
Test Date: 10/30/2008

AQUIFER DATA

Saturated Thickness: 85. ft
Anisotropy Ratio (Kz/Kr): 1.

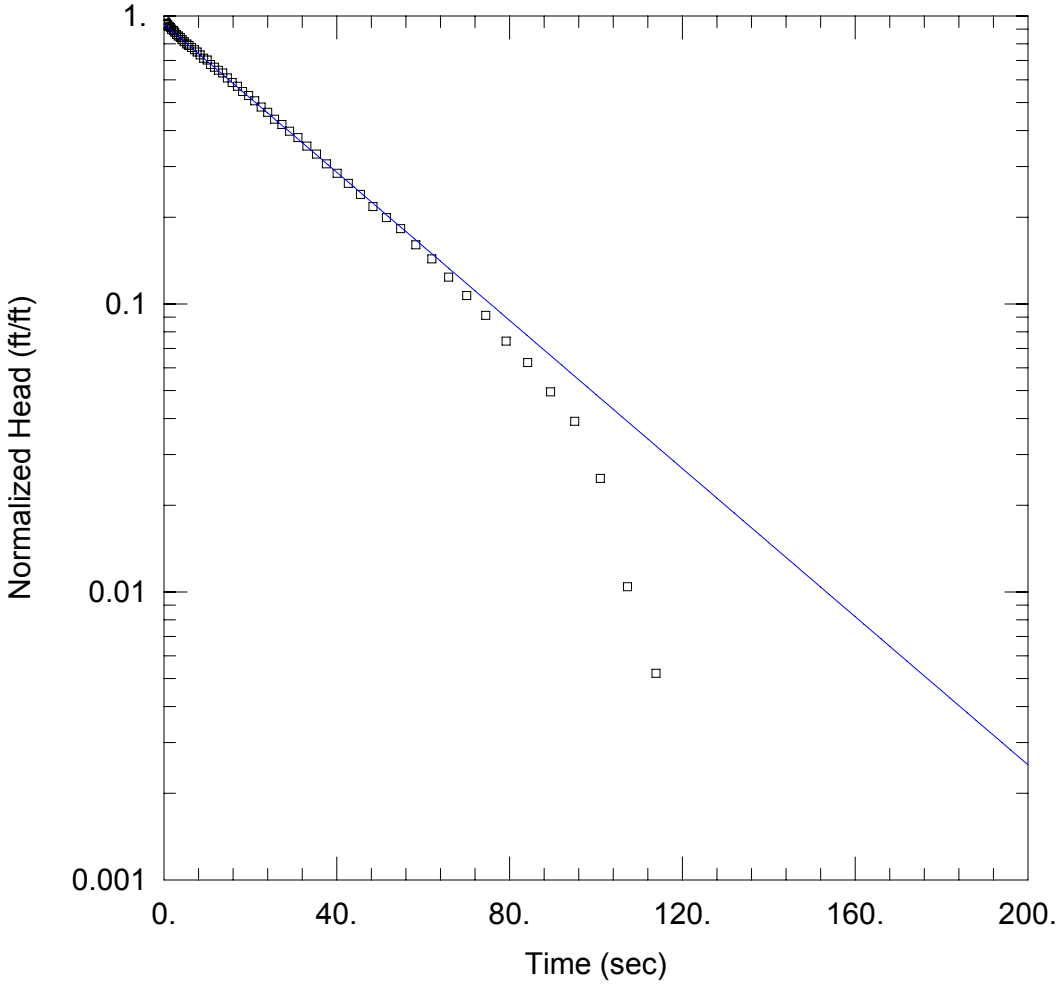
WELL DATA (New Well)

Initial Displacement: 1. ft
Static Water Column Height: 80.9 ft
Total Well Penetration Depth: 80.9 ft
Screen Length: 5. ft
Casing Radius: 0.0833 ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.06044 ft/day
y0 = 0.921 ft



WELL TEST ANALYSIS

Data Set: P:\...\IR86_MW44IW_Air_RH1.aqt
Date: 11/19/08 Time: 10:03:33

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW44IW
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

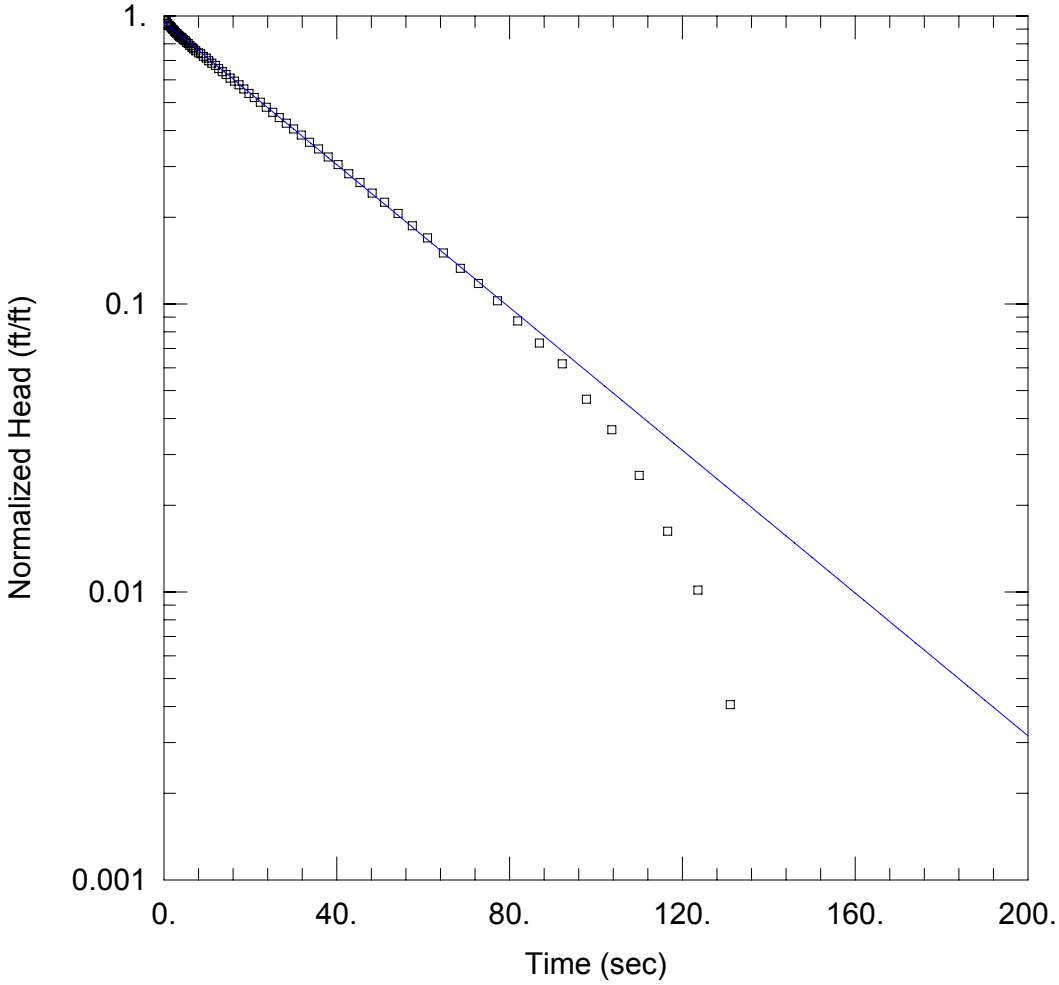
WELL DATA (IR86-MW44IW)

Initial Displacement: 1. ft Static Water Column Height: 37.96 ft
Total Well Penetration Depth: 37.96 ft Screen Length: 7. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.629 ft/day y0 = 0.9363 ft



WELL TEST ANALYSIS

Data Set: P:\...\IR86_MW44IW_Air_RH2.aqt
Date: 11/19/08 Time: 10:04:01

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW44IW
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

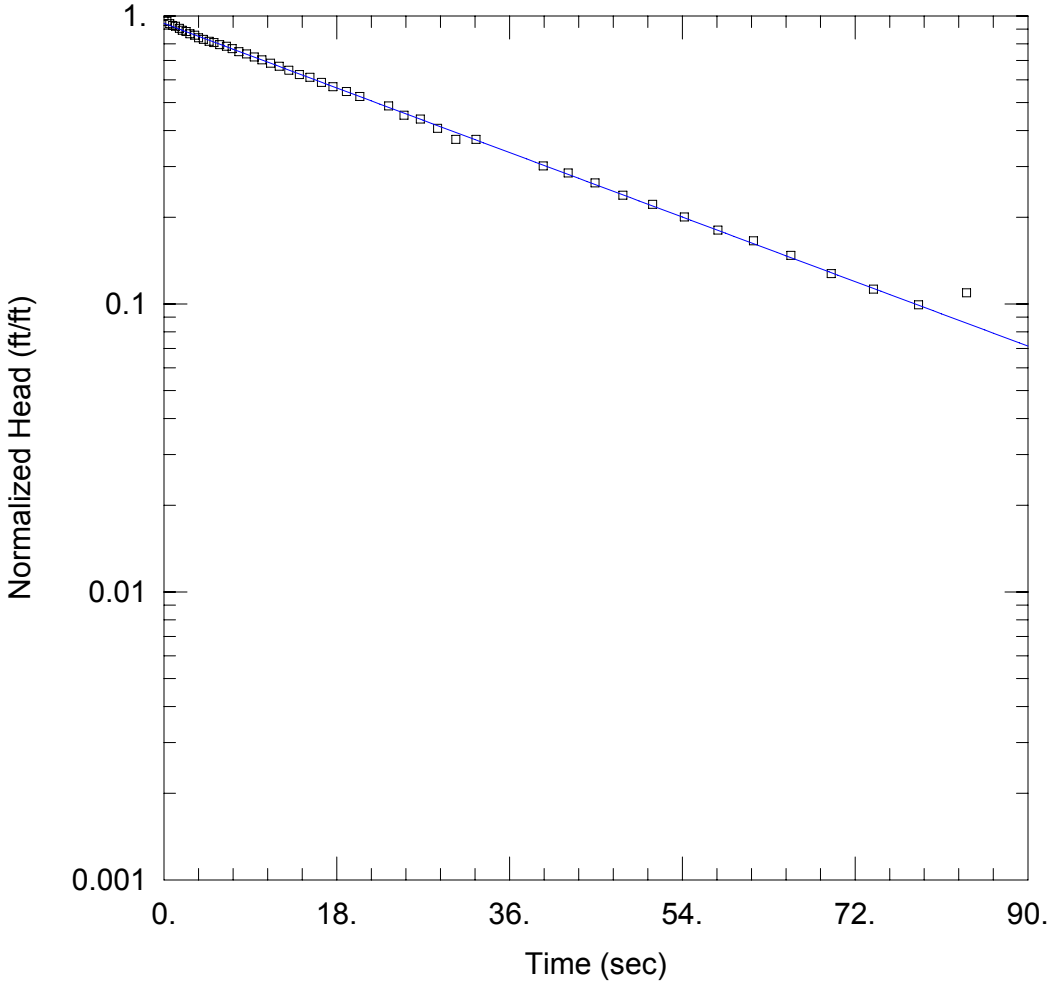
WELL DATA (IR86-MW44IW)

Initial Displacement: 1. ft Static Water Column Height: 37.96 ft
Total Well Penetration Depth: 37.96 ft Screen Length: 7. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.462 ft/day y0 = 0.953 ft



WELL TEST ANALYSIS

Data Set: P:\...\IR86_MW44IW_Air_RH3.aqt
Date: 11/19/08 Time: 10:04:38

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW44IW
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft
Anisotropy Ratio (Kz/Kr): 1.

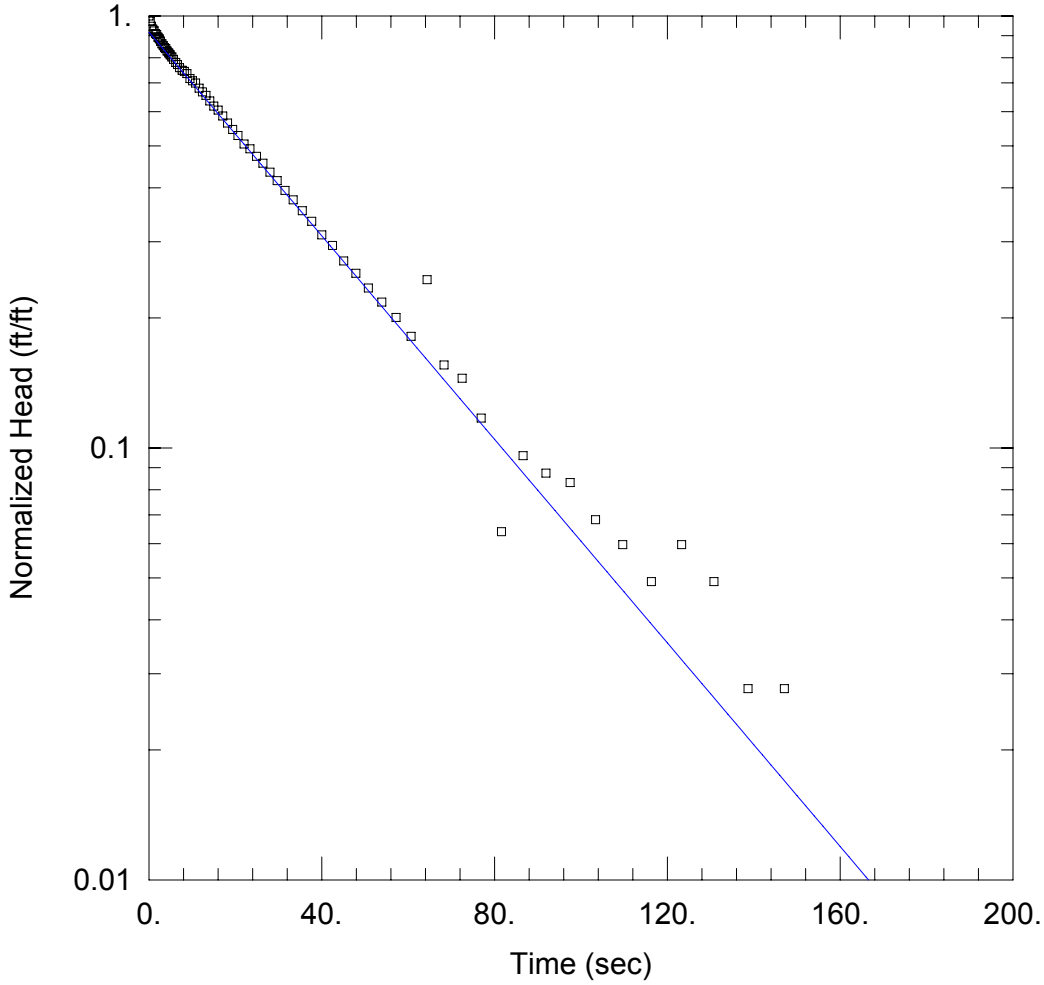
WELL DATA (IR86-MW44IW)

Initial Displacement: 1. ft
Total Well Penetration Depth: 37.96 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 37.96 ft
Screen Length: 7. ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 4.482 ft/day
y0 = 0.9419 ft



WELL TEST ANALYSIS

Data Set: P:\...\IR86_MW44IW_Air_RH4.aqt
Date: 11/19/08 Time: 10:04:18

PROJECT INFORMATION

Company: CH2M HILL
Client: NAVFAC
Project: 370855
Location: Camp Lejeune OU 20, Site 86
Test Well: IR86_MW44IW
Test Date: 10/29/2008

AQUIFER DATA

Saturated Thickness: 85. ft Anisotropy Ratio (Kz/Kr): 1.

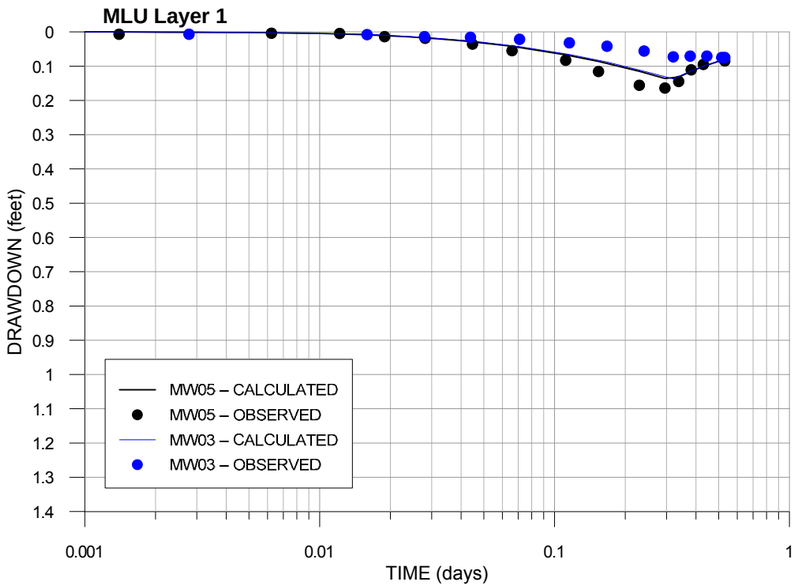
WELL DATA (IR86-MW44IW)

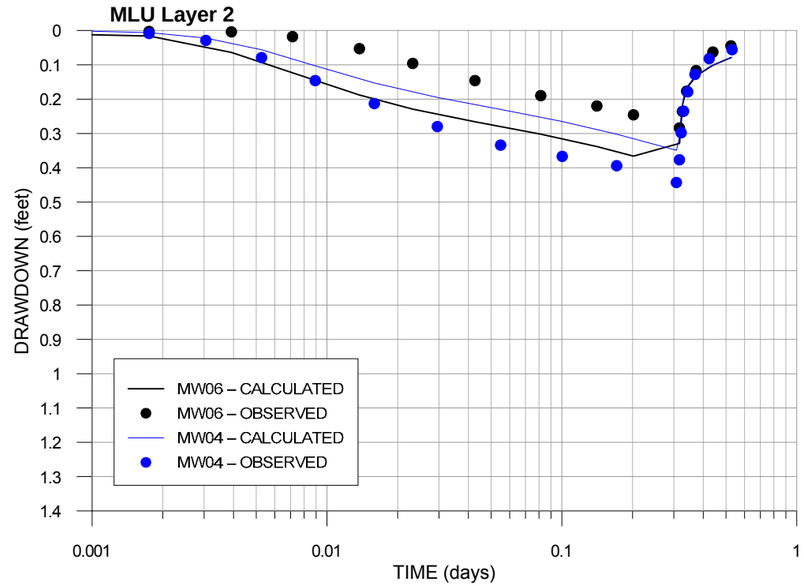
Initial Displacement: 1. ft Static Water Column Height: 37.96 ft
Total Well Penetration Depth: 37.96 ft Screen Length: 7. ft
Casing Radius: 0.0833 ft Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

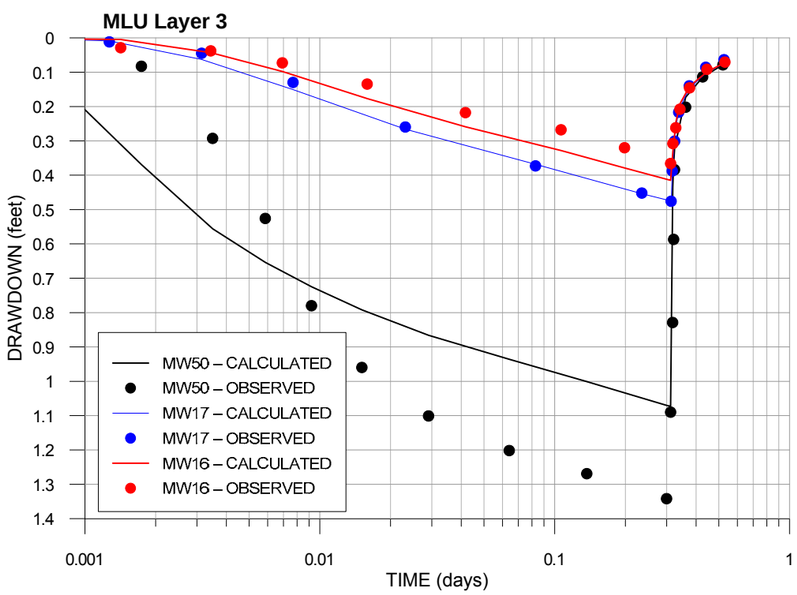
K = 4.241 ft/day y0 = 0.9165 ft

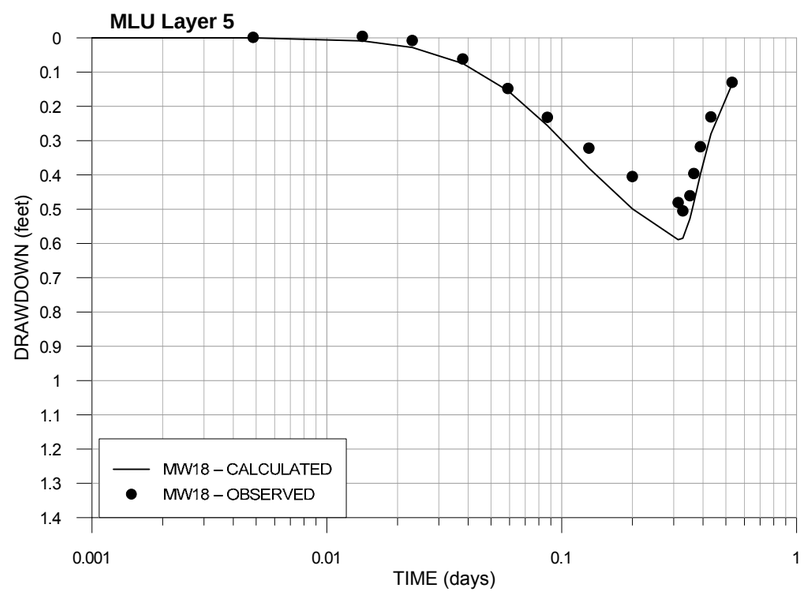




Results of Aquifer Test Analysis

MLU Layer	Description	Thickness (feet)	Kh (feet/day)	Kv (feet/day)	Kh:Kv Ratio	Transmissivity ($feet^2$/day)
1	Upper Surficial Aquifer	12.6	40	0.1	400	504
2	Lower Surficial Aquifer	21.0	3	0.1	30	63
3	Upper Castle Hayne	16.9	28	1	28	473
4	Upper-Middle Castle Hayne	49.2	3	0.1	30	148
5	Lower-Middle Castle Hayne	5.0	0.5	0.1	5	3





NOTES:

THE CALCULATED DRAWDOWN DATA SHOWN ON EACH PLOT WERE OBTAINED FROM THE MLU CODE (HEMKER AND POST, 2010).

ONLY DATA FROM OBSERVATION WELLS SHOWN.

Figure D1
Results from the PTW-1 Aquifer Test Analysis
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

\\Odin\proj\USNAVFACENGCOM\Modeling\Site86\Figures\Grapher\MLU_RESULTS.GRF

Appendix E
SRI Data

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-AS428-MW05	IR86-GW15IW	IR86-GW16IW	IR86-GW17IW	IR86-GW23IW	IR86-GW29IW	IR86-GW31DW	IR86-MW01	IR86-MW02IW	IR86-MW03
Sample ID				IR86-AS428-GW05-06B	IR86-GW15IW-06B	IR86-GW16IW-06B	IR86-GW17IW-06B	IR86-GW23IW-06B	IR86-GW29IW-06B	IR86-GW31DW-06B	IR86-GW01-06B	IR86-GW02IW-06B	IR86-GW03-06B
Sample Date				04/07/06	04/06/06	04/05/06	04/06/06	04/06/06	04/06/06	04/05/06	04/06/06	04/06/06	04/07/06
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.4 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	7.9	0.5 U	0.5 U	0.92 J	1 J	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.38 J	0.5 U	0.5 U	0.5 U	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 J	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 R	5 U
Benzene	--	1	0.41	0.5 U	4.8	0.43 J	0.5 U	1.4 J	0.96 J	0.5 U	0.5 UJ	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	490	2.3	0.5 U	120	45	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	23	0.5 U	0.5 U	1.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	0.58	2.8	0.5 U	0.67	340	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	--	0.03	0.016	0.5 U	5.5	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	5,300	3,900	4,700	5,500	2,200	4,500	560	76,000	7,100	430
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	32	260	240	280	210	320	240	120	79	20 U
Chloride (mg/L)	--	250	--	14	26	36	43	19	39	84	36	34	34
Ferric iron (mg/L)	--	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	72	10 U	10 U
Ferrous iron (mg/L)	--	--	--	3.3	1 J	1.4	5 UJ	1 UJ	1.3	1 U	4.3	3.7	1 U
Methane (µg/L)	--	--	--	600	110	90	170	32	280	14 U	580	620	14 U
Nitrate (mg/L)	--	10	--	0.13 U	1.4 J	0.13 UJ	0.13 U	0.38	0.13 U	0.13 UJ	0.24	0.13 U	0.16
Nitrite (mg/L)	--	1	--	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Sulfate (mg/L)	--	250	--	12 J	7	48	5.6 J	5.3	42	81	38	5.9	36 J
Total organic carbon (TOC) (mg/L)	--	--	--	16	10 U	10 U	10 U	10 U	10 U	10 U	23	10 U	10 U

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conservative.

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW04IW		IR86-MW05	IR86-MW06IW	IR86-MW07	IR86-MW08IW	IR86-MW09	IR86-MW10IW	IR86-MW11	IR86-MW12IW
Sample ID				IR86-GW04IW-06B	IR86-GW04IW-06B-DUP	IR86-GW05-06B	IR86-GW06IW-06B	IR86-GW07-06B	IR86-GW08IW-06B	IR86-GW09-06B	IR86-GW10IW-06B	IR86-GW11-06B	IR86-GW12IW-06B
Sample Date				04/07/06	04/07/06	04/05/06	04/05/06	04/06/06	04/06/06	04/06/06	05/11/06	04/06/06	04/06/06
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	510	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.9	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	5 R	5 U	5 U	5 U	5 U	5 U	5 U	74 J	5 U	5 U
Benzene	--	1	0.41	1.6	1.8	0.5 U	0.5 U	0.48 J	0.5 U	0.5 U	1.9	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	32	32	0.5 U	0.69	0.5 U	0.5 U	0.5 U	47	0.5 U	0.5 U
Dibromochloromethane	--	0.4	0.15	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	47	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.38 J	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	7.4	8.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	64	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.8	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.1 J	0.5 U	0.5 U
Trichloroethene	--	3	2	1.4	1.6	0.5 U	0.57	0.5 U	0.5 U	0.5 U	39	0.5 U	0.5 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	21	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.76	0.5 U	0.5 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	3,300	3,300	380,000	4,200	38,000	13,000	3,600	12,000	34,000	3,400
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	30	30	61	20 U	67	390	36	20	360	38
Chloride (mg/L)	--	250	--	21	21	20	24	17	24	7.3 J	100 J	12	15
Ferric iron (mg/L)	--	--	--	10 U	10 U	380	10 U	34	10 U	10 U	10 U	34	10 U
Ferrous iron (mg/L)	--	--	--	2 J	0.13 J	3.8	3.2	4.1	4.8	1 UJ	3.9 J	1 UJ	2.4 J
Methane (µg/L)	--	--	--	590	620	210	300	570	97	14 U	940	1,200	44
Nitrate (mg/L)	--	10	--	0.13 U	0.13 U	0.17 J	0.13 UJ	0.13 U	0.13 U	0.29 J	0.13 U	0.21 J	0.13 UJ
Nitrite (mg/L)	--	1	--	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Sulfate (mg/L)	--	250	--	51 J	51 J	31	51	81	55	29	110	13	55
Total organic carbon (TOC) (mg/L)	--	--	--	10 U	10 U	18	10 U	10 U	10 U	10 U	10 U	12	10 U

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW13	IR86-MW14IW	IR86-MW15DW	IR86-MW16DW		IR86-MW17DW	IR86-MW18DW	IR86-MW19DW	IR86-MW20IW
Sample ID				IR86-GW13-06B	IR86-GW14IW-06B	IR86-GW15DW-06B	IR86-GW16DW-06B	IR86-GW16DW-06BDUP	IR86-GW17DW-06B	IR86-GW18DW-06B	IR86-GW19DW-06B	IR86-GW20IW-06B
Sample Date				04/05/06	04/05/06	04/06/06	04/05/06	04/05/06	04/07/06	04/07/06	05/11/06	04/06/06
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.47 J
Acetone	--	6,000	2,200	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	11
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	78
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.46 J	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)												
Iron	5,999	300	2,600	570	7,100	430	340	320	480	200 U	400	4,900
Wet Chemistry												
Alkalinity (mg/L)	--	--	--	40	420	190	240	240	270	270	210	270
Chloride (mg/L)	--	250	--	14	28	26	64	66	150	120	74 J	22
Ferric iron (mg/L)	--	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ferrous iron (mg/L)	--	--	--	1 U	3.7	1 U	1 U	1 U	1 U	0.13 UJ	1 U	1.1
Methane (µg/L)	--	--	--	14 U	280	14 U	14 U	14 U	14 U	18	34	130
Nitrate (mg/L)	--	10	--	1.2 J	0.13 UJ	0.2 J	0.13 UJ	0.16 J	0.28	0.13 U	0.13 U	0.13 U
Nitrite (mg/L)	--	1	--	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Sulfate (mg/L)	--	250	--	52	24	14	30 J	97 J	24 J	28 J	15	5.4
Total organic carbon (TOC) (mg/L)	--	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW21IW	IR86-MW22IW	IR86-MW23IW	IR86-MW24IW	IR86-MW25IW	IR86-MW26IW	IR86-MW27IW	IR86-MW28IW		
Sample ID				IR86-GW21IW-06B	IR86-GW22IW-06B	IR86-GW23IW-06BDUP	IR86-GW24IW-06B	IR86-GW25IW-06B	IR86-GW26IW-06B	IR86-GW27IW-06B	IR86-GW28IW-06A	IR86-GW28IW-P-06A	IR86-GW28IW-06B
Sample Date				05/10/06	04/06/06	04/06/06	05/10/06	05/10/06	05/11/06	05/10/06	01/26/06	01/26/06	04/06/06
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 UJ	0.5 U	0.5 U	0.5 U	110	0.5 UJ	17	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.41 J	0.5 U	0.5 U	0.5 U	7.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	3.9	0.5 U	1.9 J	0.5 U	31	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	2.5 U	2.5 U	5 U
Benzene	--	1	0.41	1.8	0.5 U	2.7 J	2.1	0.5 U	0.31 J	1.4	0.11 J	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	160	0.97	140	0.45 J	15	2.8	98	0.3 J	0.27 J	0.4 J
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 UJ	0.39 J	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 UJ	0.5 U	0.5 U	0.5 UJ	4.2 J	0.5 UJ	3.2 J	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.91	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.39 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	36	0.5 U	2.5 J	0.5 U	0.5 U	0.5 U	0.68	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	39	0.5 U	0.84	0.5 U	24	0.5 U	160	0.34 J	0.22 J	0.39 J
Vinyl chloride	--	0.03	0.016	12	6.9	4.5 J	0.5 U	1.4	1.1	12	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	5,900	3,100	1,000	3,700	3,400	2,500	2,900	NA	NA	4,000
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	330	290	220	240	27	260	45	NA	NA	320
Chloride (mg/L)	--	250	--	43 J	32	19	23 J	34 J	39 J	39 J	48.8	49	91
Ferric iron (mg/L)	--	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10 U
Ferrous iron (mg/L)	--	--	--	1.2 J	1 U	1 UJ	1 UJ	2.9 J	1 U	2.5 J	NA	NA	1 UJ
Methane (µg/L)	--	--	--	1,500	550	18	1,400	450	2,200	660	NA	NA	88
Nitrate (mg/L)	--	10	--	0.13 U	0.13 UJ	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA	0.26 UJ
Nitrite (mg/L)	--	1	--	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	NA	NA	0.26 U
Sulfate (mg/L)	--	250	--	6.7	7.9	5 U	5 U	56	18	67	NA	NA	40
Total organic carbon (TOC) (mg/L)	--	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10 U

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW30IW		IR86-MW31IW		IR86-MW32IW		IR86-MW33DW	
Sample ID				IR86-GW30IW-06B	IR86-GW30IW-06BDUP	IR86-GW31IW-06A	IR86-GW31IW-06B	IR86-GW32IW-06A	IR86-GW32IW-06B	IR86-GW33DW-06B	IR86-GW33DW-06BDUP
Sample Date				05/10/06	05/10/06	01/26/06	04/05/06	01/27/06	04/05/06	05/10/06	05/10/06
Chemical Name											
Volatile Organic Compounds (µg/L)											
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.77 J	0.5 UJ	0.5 U	0.5 U	0.12 J	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	5 U	5 U	2.5 U	5 U	2.5 U	5 U	5 U	5 U
Benzene	--	1	0.41	2.1	1.6	0.5 U	0.5 U	0.77	1	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	110	73	0.5 U	1.1	7.2	6.5	0.32 J	0.5 U
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 UJ	0.5 UJ	0.5 U	0.32 J	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	7 J	5.6 J	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	18	17	0.6	2.2	3	2.7	0.34 J	0.32 J
Vinyl chloride	--	0.03	0.016	2.7	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)											
Iron	5,999	300	2,600	7,300	4,000	NA	7,500	NA	1,800	1,800	1,000
Wet Chemistry											
Alkalinity (mg/L)	--	--	--	410	260	NA	490	NA	250	170	130
Chloride (mg/L)	--	250	--	29 J	24 J	17.5	47	45.2	110	18 J	27 J
Ferric iron (mg/L)	--	--	--	10 U	10 U	NA	10 U	NA	10 U	10 U	10 U
Ferrous iron (mg/L)	--	--	--	1 UJ	1 UJ	NA	1.3	NA	1.1	1 UJ	1 UJ
Methane (µg/L)	--	--	--	1,300	840	NA	51	NA	76	69	67
Nitrate (mg/L)	--	10	--	0.13 U	0.13 U	NA	0.13 UJ	NA	0.13 UJ	0.13 U	0.13 U
Nitrite (mg/L)	--	1	--	0.13 U	0.13 U	NA	0.18	NA	0.13 U	0.13 U	0.13 U
Sulfate (mg/L)	--	250	--	19	11	NA	700	NA	1,300	19	22
Total organic carbon (TOC) (mg/L)	--	--	--	10 U	10 U	NA	10 U	NA	10 U	17	14

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW33IW		IR86-MW34IW	IR86-MW35IWA		IR86-MW35IWB	
Sample ID				IR86-GW33IW-06A	IR86-GW33IW-06B	IR86-GW34IW-06B	IR86-GW35IWA-06A	IR86-GW35IWA-06B	IR86-GW35IWB-06A	IR86-GW35IWB-06B
Sample Date				01/26/06	05/03/06	05/10/06	01/26/06	05/03/06	01/26/06	05/03/06
Chemical Name										
Volatile Organic Compounds (µg/L)										
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	2.5 U	2.5 U	5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	20	1.7	0.5 U	0.5 U	0.5 U	0.25 J
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.55	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.13 J	1.1 U	8.8	0.17 J	0.5 U	0.5 U	1.4
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)										
Iron	5,999	300	2,600	NA	NA	1,400	NA	NA	NA	NA
Wet Chemistry										
Alkalinity (mg/L)	--	--	--	NA	NA	300	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	5.65	21.1	32 J	20.5	24.4	24.5	27.3
Ferric iron (mg/L)	--	--	--	NA	NA	10 U	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	1 UJ	NA	NA	NA	NA
Methane (µg/L)	--	--	--	NA	NA	15	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	0.13 U	NA	NA	NA	NA
Nitrite (mg/L)	--	1	--	NA	NA	0.13 U	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	12	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	10 U	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW35IWC			IR86-MW36IWA		IR86-MW36IWB		
Sample ID				IR86-GW35IWC-06A	IR86-GW35IWCP-06A	IR86-GW35IWC-06B	IR86-GW36IWA-06A	IR86-GW36IWA-06B	IR86-GW36IWB-06A	IR86-GW36IWB-06B	IR86-GW36IWBD-06B
Sample Date				01/26/06	01/26/06	05/03/06	01/26/06	05/03/06	01/26/06	05/03/06	05/03/06
Chemical Name											
Volatile Organic Compounds (µg/L)											
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.5 U	15	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	3.5	0.5 U	0.5 U	0.36 J	0.37 J	0.21 J
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.24 J	0.2 J	15	0.3 J	0.5 U	0.88	1.1 U	1.1 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)											
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry											
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	16.1	15.3	16.8	32.6	36.1	20.8	24.8	25.4
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite (mg/L)	--	1	--	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW36IWC		IR86-MW37IWA			IR86-MW37IWB		IR86-MW37IWC	
Sample ID				IR86-GW36IWC-06A	IR86-GW36IWC-06B	IR86-GW37IWA-06A	IR86-GW37IWA-06B	IR86-GW37IWAD-06B	IR86-GW37IWB-06A	IR86-GW37IWB-06B	IR86-GW37IWC-06A	IR86-GW37IWC-06B
Sample Date				01/26/06	05/03/06	01/26/06	05/02/06	05/02/06	01/26/06	05/02/06	01/26/06	05/02/06
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.77	0.39 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.37 J	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.33 J	0.5 U
Carbon disulfide	--	700	100	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	38	18	0.5 U	0.5 U	0.5 U	0.34 J	5.8	8.4	0.51
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.74	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.35 J	0.53	0.5 U
Trichloroethene	--	3	2	70	26	0.48 J	0.5 U	0.5 U	1.9	12	14	1.5
Vinyl chloride	--	0.03	0.016	1.3	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)												
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry												
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	19.9	14.5	31.3	35.6	35.4	25.1	37.4	44.9	42
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite (mg/L)	--	1	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E1
Baseline Investigation (2006) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW38IWA		IR86-MW38IWB		IR86-MW38IWC	
Sample ID				IR86-GW38IWA-06A	IR86-GW38IWA-06B	IR86-GW38IWB-06A	IR86-GW38IWB-06B	IR86-GW38IWC-06A	IR86-GW38IWC-06B
Sample Date				01/26/06	05/02/06	01/26/06	05/02/06	01/26/06	05/02/06
Chemical Name									
Volatile Organic Compounds (µg/L)									
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.35 J	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	2.1	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	--	6,000	2,200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.5 U	0.58	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.51	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	0.27 J	62	0.28 J	0.24 J
Dibromochloromethane	--	0.4	0.15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.16	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.13	0.12 J	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U
Trichloroethene	--	3	2	0.14 J	0.2	0.94	200	0.74	1.7
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.54	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)									
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA
Wet Chemistry									
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	26.9	31.7	21.7	23.7	27.8	27.7
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA
Methane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA
Nitrite (mg/L)	--	1	--	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conserva

NA - Not analyzed
µg/L - Micrograms per liter
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
R - Unreliable result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:		IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	Meth_Blk	TB022807	SG001	SG002	SG003	SG004
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030103	07030104	07030105	07030106	07030107	07030108
Received Date:		3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Time:	12:25	12:54	13:23	13:52	15:16	15:46
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	**30**	**24 J**	<25	**6 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	**16 J**	**8 J**	**13 J**	**10 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	**5 J**	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	**4 J**
p & m-Xylene	<25	<25	**4 J**	<25	<25	**5 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	**16 J**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	**15 J**	**18 J**
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG005	SG006	SG007	SG008	SG009	SG009 D
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030109	07030110	07030111	07030112	07030113	07030114
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Time:	16:15	16:44	17:14	17:43	18:12	18:41
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**10 J**	<25	<25	**12 J**	**15 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**4 J**	**97**	**7 J**	**7 J**	**40**	**41**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**6 J**	**6 J**	<25	**4 J**	**32**	**20 J**
p & m-Xylene	**9 J**	**9 J**	<25	**8 J**	**36**	**21 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**7 J**	<25	<25	**7 J**	**32**	**19 J**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	**16 J**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG010	SG011	SG012	SG013	SG014	SG016
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030115	07030116	07030117	07030118	07030119	07030120
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Time:	19:10	19:40	20:09	20:38	21:07	21:36
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**5 J**	**7 J**	<25	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**6 J**	**6 J**	**19 J**	**6 J**	**21 J**	**89**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**20 J**	<25	<25	**8 J**	**8 J**	**62**
p & m-Xylene	**297**	<25	<25	**9 J**	**11 J**	**245**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**301**	<25	<25	**10 J**	**11 J**	**182**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	**11 J**	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG017	SG018	SG019	SG020	SG021	SG022
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030121	07030122	07030123	07030124	07030125	07030126
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/2/2007	3/2/2007
Analysis Time:	22:05	22:34	23:03	23:32	12:01	12:31
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	**7 J**	<25	<25	**8 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**18 J**	**7 J**	**57**	**176**	**11 J**	**12 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**267**	**501**	**130**	**69**	**7 J**	**40**
p & m-Xylene	**985**	**1,475**	**390**	**224**	**17 J**	**55**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**780**	**1,112**	**344**	**159**	**19 J**	**52**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	**27**	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG023	SG024	SG025	SG028	SG029	SG030
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030127	07030128	07030129	07030130	07030131	07030132
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	1:00	1:29	1:58	2:27	2:56	3:25
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**8 J**	**6 J**	<25	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**28**	**13 J**	**14 J**	**11 J**	**20 J**	**77**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**17 J**	**14 J**	**47**	<25	<25
p & m-Xylene	**5 J**	**24 J**	**17 J**	**405**	**8 J**	**9 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**25**	**17 J**	**356**	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG032	SG033	SG038	SG039	SG040	SG043
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030133	07030134	07030135	07030136	07030137	07030138
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	3:54	4:23	4:53	5:22	5:51	6:20
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	**6 J**	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**6 J**	**7 J**	<25	**13 J**	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**10 J**	**5 J**	**24 J**	**6 J**	**20 J**	**7 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	**6 J**	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	**132**	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG043 D	SG044	SG048	SG049	SG050	SG051
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030139	07030140	07030141	07030142	07030143	07030144
Received Date:	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007	3/1/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	6:49	7:18	7:47	8:17	8:46	9:15
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	**20 J**	<25	<25	<25
Chloroform	<25	**32**	<25	**12 J**	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**6 J**	**7 J**	<25	<25	**6 J**	**8 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	**32**	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**6 J**	**7 J**	**7 J**	**15 J**	**22 J**	**6 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	**5 J**	<25	<25	<25	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	**19 J**
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-		IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG052	Meth_Blk	TB030107	SG026	SG027	SG031
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030145	07030203	07030204	07030205	07030206	07030207
Received Date:	3/1/2007		3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	9:44	12:57	13:27	13:56	14:26	14:55
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	**13 J**	<25	<25	**20 J**	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	**7 J**	**5 J**	**10 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**9 J**	<25	**4 J**	**55**	**6 J**	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	**278**	**156**	**171**
p & m-Xylene	<25	<25	<25	**595**	**527**	**419**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	**790**	**512**	**363**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	**18 J**
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	**45**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG034	SG035	SG036	SG037	SG041	SG042
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030208	07030209	07030210	07030211	07030212	07030213
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	15:25	15:54	16:23	16:53	17:23	17:52
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	**106**	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**4 J**	**8 J**	**19 J**	**4 J**	**18 J**	**10 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**22 J**	**54**	<25	<25	**31**	**21 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**30**	**124**	**1,052**	**215**	**304**	**492**
p & m-Xylene	**77**	**293**	**2,351**	**501**	**685**	**905**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**62**	**296**	**2,149**	**437**	**543**	**815**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**16 J**	**39**	<25	**28**	**6 J**
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	**67**	**10 J**	<25	**13 J**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	**50**	<25	<25	<25	**8 J**	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	**7 J**	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-	
Client Sample ID:	SG045	SG046	SG047	SG053	SG054	SG055	
Project Number:	1976	1976	1976	1976	1976	1976	
Lab File ID:	07030214	07030215	07030216	07030217	07030218	07030219	
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	
Analysis Time:	18:22	18:51	19:21	19:50	20:20	20:49	
Units:	ng	ng	ng	ng	ng	ng	
COMPOUNDS							
Vinyl Chloride	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25	
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25	
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Chloroform	<25	<25	<25	<25	<25	**93**	
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25	
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25	
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25	
Benzene	**9**	**J**	**5 J**	**7 J**	**9 J**	**8 J**	**5 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
Trichloroethene	<25	<25	<25	<25	<25	<25	
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25	
Toluene	**13 J**	**8 J**	**11 J**	**15 J**	**50**	**11 J**	
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25	
Tetrachloroethene	<25	<25	<25	<25	<25	<25	
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
Chlorobenzene	<25	<25	<25	<25	<25	<25	
Ethylbenzene	**8 J**	**4 J**	**4 J**	<25	<25	<25	
p & m-Xylene	**8 J**	**5 J**	**5 J**	**10 J**	**11 J**	<25	
Bromoform	<25	<25	<25	<25	<25	<25	
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
o-Xylene	**8 J**	<25	<25	**10 J**	<25	<25	
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25	
Isopropylbenzene	<25	<25	<25	<25	**5 J**	<25	
1,3,5-Trimethylbenzene	<25	<25	<25	**11 J**	<25	<25	
1,2,4-Trimethylbenzene	<25	**9 J**	<25	**32**	<25	<25	
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
n-Butylbenzene	<25	<25	<25	<25	<25	<25	
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25	
Naphthalene	<25	<25	<25	<25	<25	<25	
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25	

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG058	SG058 D	SG059	SG060	SG065	SG066
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030220	07030221	07030222	07030223	07030224	07030225
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Time:	21:19	21:48	22:18	22:47	23:16	23:46
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**11 J**	**14 J**	<25	**16 J**	**10 J**	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**36**	**37**	**5 J**	**31**	**232**	**6 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**108**	**149**	**4 J**	**155**	**95**	<25
p & m-Xylene	**221**	**311**	**8 J**	**312**	**100**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**155**	**222**	**6 J**	**219**	**248**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	**24 J**	**49**	<25	**73**	<25	<25
1,2,4-Trimethylbenzene	**70**	**143**	<25	**193**	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG067	SG071	SG071 D	SG072	SG072 D	SG073
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030226	07030227	07030228	07030229	07030230	07030231
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007
Analysis Time:	12:15	12:44	1:14	1:43	2:12	2:42
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**7 J**	**38**	**38**	**17 J**	**21 J**	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**8 J**	**14,142**	**12,296**	**183**	**141**	**12 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**647**	**464**	**1,627**	**2,014**	<25
p & m-Xylene	<25	**1,164**	**863**	**2,398**	**3,225**	**16 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**1,326**	**1,057**	**2,394**	**3,207**	**21 J**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**37**	**34**	**43**	**48**	<25
1,3,5-Trimethylbenzene	<25	**143**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	**97**	<25	**27**	**39**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-	
Client Sample ID:	SG077	SG083	SG088	SG094	SG099	SG106	
Project Number:	1976	1976	1976	1976	1976	1976	
Lab File ID:	07030232	07030233	07030234	07030235	07030236	07030237	
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	
Analysis Date:	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007	
Analysis Time:	3:11	3:40	4:09	4:39	5:08	5:37	
Units:	ng	ng	ng	ng	ng	ng	
COMPOUNDS							
Vinyl Chloride	<25	**19 J**	<25	<25	<25	<25	
1,1-Dichloroethene	<25	<25	<25	**26**	**301**	<25	
trans-1,2-Dichloroethene	<25	**23 J**	<25	<25	<25	<25	
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethane	<25	<25	<25	<25	**26**	<25	
cis-1,2-Dichloroethene	<25	**117**	<25	**7 J**	<25	<25	
Chloroform	<25	<25	<25	**112**	<25	<25	
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25	
1,1,1-Trichloroethane	<25	<25	<25	<25	**878**	<25	
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25	
Benzene	**24**	**J38**	**39**	**27**	**30**	**6**	**J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
Trichloroethene	<25	<25	<25	**7,653**	**34**	<25	
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25	
Toluene	**18 J**	**54**	**314**	**77**	**79**	**12 J**	
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25	
Tetrachloroethene	<25	<25	<25	**155**	<25	<25	
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
Chlorobenzene	<25	<25	<25	<25	<25	<25	
Ethylbenzene	**133**	**146**	**332**	**123**	**347**	**19 J**	
p & m-Xylene	**326**	**284**	**806**	**262**	**815**	**11 J**	
Bromoform	<25	<25	<25	<25	<25	<25	
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
o-Xylene	**300**	**205**	**780**	**193**	**744**	**11 J**	
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25	
Isopropylbenzene	**10 J**	**13 J**	**27**	**13 J**	**24 J**	<25	
1,3,5-Trimethylbenzene	<25	**95**	**122**	**101**	**128**	<25	
1,2,4-Trimethylbenzene	**42**	**258**	**342**	**300**	**353**	**16 J**	
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
n-Butylbenzene	<25	**5 J**	<25	<25	<25	<25	
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25	
Naphthalene	**25**	<25	**23 J**	**16 J**	**31**	<25	
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25	

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG110	SG111	SG119	SG120	SG121	SG122
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030238	07030239	07030240	07030241	07030242	07030243
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/3/2007
Analysis Time:	6:06	6:35	7:04	7:33	8:03	8:32
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**6 J**	**21 J**	**5 J**	**7 J**	**7 J**	**19 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**12 J**	**46**	<25	**18 J**	**10 J**	**35**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**129**	**54**	**14 J**	**646**	**250**	**2,757**
p & m-Xylene	**338**	**107**	**11 J**	**1,527**	**615**	**6,063**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**264**	**72**	**6 J**	**1,408**	**567**	**5,381**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	**22 J**	<25	**217**
1,3,5-Trimethylbenzene	<25	**34**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**65**	**100**	<25	<25	**11 J**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	**2 J**	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-		IR86-
Client Sample ID:	SG126	SG127	SG128	SG129	Meth_Blk	SG136
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030244	07030245	07030246	07030247	07030503	07030504
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007		3/2/2007
Analysis Date:	3/3/2007	3/3/2007	3/3/2007	3/3/2007	3/5/2007	3/5/2007
Analysis Time:	9:01	9:30	9:59	10:28	10:21	10:50
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	**6 J**	**11 J**	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**9 J**	<25	**10 J**	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**14 J**	**19 J**	**13 J**	**21 J**	<25	**38**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**278**	**1,629**	**303**	**9 J**	<25	**20 J**
p & m-Xylene	**702**	**3,899**	**678**	**19 J**	<25	**58**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**633**	**3,698**	**553**	**15 J**	<25	**47**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**63**	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	**14 J**	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	**11 J**	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG137	SG141	SG142	SG143	SG144	SG149
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030505	07030506	07030507	07030508	07030509	07030510
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007
Analysis Time:	11:18	11:47	12:16	12:45	13:14	13:43
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	**7 J**	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**12 J**	**15 J**	**21 J**	**7 J**	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**26**	**58**	**69**	**7 J**	**8 J**	**19 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**101**	**190**	**87**	**782**	**349**	**6 J**
p & m-Xylene	**181**	**527**	**204**	**1,855**	**866**	**12 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**118**	**392**	**174**	**1,712**	**735**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**12 J**	**7 J**	**29**	**9 J**	<25
1,3,5-Trimethylbenzene	<25	**167**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	**579**	**48**	<25	<25	**25**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	**7 J**	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	**68**
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG150	SG151	SG152	SG155	SG156	SG157
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030511	07030512	07030513	07030514	07030515	07030516
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007
Analysis Time:	14:12	14:41	15:10	15:39	16:08	16:37
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**30**	<25	<25	**11 J**	**6 J**	**9 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**80**	**7 J**	**5 J**	**11 J**	**4 J**	**7 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**443**	**22 J**	**8 J**	**871**	<25	**46**
p & m-Xylene	**1,199**	**35**	**5 J**	**2,169**	**12 J**	**110**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**1,117**	**27**	<25	**1,869**	**11 J**	**79**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	**104**	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**287**	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG158	SG162	SG163	SG165	SG166	SG171
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030517	07030518	07030519	07030520	07030521	07030522
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007
Analysis Time:	17:07	17:36	18:05	18:34	19:03	19:32
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	**12 J**	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	**80**	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	**234**	<25	<25	<25
Chloroform	<25	<25	<25	<25	**18 J**	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**10 J**	**42**	**17 J**	**21 J**	<25	**31**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	**2,263**	**9 J**	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**8 J**	**30**	**15 J**	**27**	**48**	**27**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**128**	**778**	**275**	**50**	**2,304**	**354**
p & m-Xylene	**310**	**1,600**	**653**	**112**	**5,784**	**742**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**256**	**1,333**	**525**	**69**	**5,643**	**621**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**18 J**	<25	<25	**99**	**10 J**
1,3,5-Trimethylbenzene	<25	**21 J**	**14 J**	**47**	<25	**20 J**
1,2,4-Trimethylbenzene	<25	**57**	**34**	**149**	<25	**52**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	**10 J**	**36**	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG172	SG172 D	SG173	SG173 D	SG174	SG175
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030523	07030524	07030525	07030526	07030527	07030528
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007	3/5/2007
Analysis Time:	20:01	20:29	20:58	21:27	21:56	22:25
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	**2,172**
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**13 J**	**9 J**	**7 J**	<25	**9 J**	**20 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**12 J**	**8 J**	**7 J**	**12 J**	**10 J**	**27**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**29**	**24 J**	**75**	**101**	**16 J**	**51**
p & m-Xylene	**27**	**23 J**	**213**	**289**	**24 J**	**121**
Bromoform	<25	<25	<25	<25	<25	**41**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**25**	**19 J**	**197**	**267**	**17 J**	**95**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	**8 J**
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	**39**
1,2,4-Trimethylbenzene	<25	<25	**22 J**	**38**	**22 J**	**114**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	**8 J**
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG176	SG177	SG181	SG182	SG186	SG187
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030529	07030530	07030531	07030532	07030533	07030534
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007
Analysis Date:	3/5/2007	3/5/2007	3/5/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Time:	22:54	23:22	23:51	12:20	12:49	1:17
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	**9 J**	<25	<25	<25	**373**	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**22 J**	**19 J**	**30**	**12 J**	**27**	**21 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**98**	**43**	**52**	**16 J**	**52**	**25**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**27**	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**358**	**210**	**665**	**747**	**931**	**61**
p & m-Xylene	**880**	**515**	**1,176**	**1,673**	**2,407**	**77**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**593**	**447**	**829**	**1,321**	**2,698**	**58**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	**20 J**	**51**	**14 J**	**16 J**	**73**	**6 J**
1,3,5-Trimethylbenzene	**197**	**328**	**22 J**	<25	**120**	**23 J**
1,2,4-Trimethylbenzene	**620**	**989**	**64**	**24 J**	**377**	**63**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	**8 J**	<25	**4 J**	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	**144**	<25	<25	**19 J**	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-		IR86-	IR86-
Client Sample ID:	SG188	SG188 D	SG192	Meth_Blk	SG193	SG194
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030535	07030536	07030537	07030603	07030604	07030605
Received Date:	3/2/2007	3/2/2007	3/2/2007		3/2/2007	3/2/2007
Analysis Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Time:	1:46	2:15	2:43	11:00	11:29	11:57
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	**8 J**	<25	<25	<25
Chloroform	**2,272**	**1,790**	**7 J**	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**66**	**57**	**19 J**	<25	**14 J**	**11 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**123**	**101**	**87**	<25	**158**	**21 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**4 J**	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**664**	**660**	**623**	<25	**209**	**1,958**
p & m-Xylene	**1,692**	**1,696**	**1,277**	<25	**410**	**4,301**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**1,999**	**1,994**	**1,202**	<25	**304**	**4,719**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	**71**	**69**	**25**	<25	<25	**113**
1,3,5-Trimethylbenzene	**165**	**176**	<25	<25	**53**	**24 J**
1,2,4-Trimethylbenzene	**447**	**469**	**72**	<25	**145**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	**33**	**41**	**14 J**	<25	**526**	**21 J**
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	
Client Sample ID:	SG195	SG196	SG202	SG203	SG204	Meth_Blk
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030606	07030607	07030608	07030609	07030610	07030613
Received Date:	3/2/2007	3/2/2007	3/2/2007	3/2/2007	3/2/2007	
Analysis Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Time:	12:26	12:55	13:24	13:52	14:21	16:08
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**13 J**	**41**	<25	<25	**5 J**	**6 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**17 J**	**80**	**8 J**	**10 J**	**7 J**	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**58**	**1,194**	**50**	**907**	**57**	<25
p & m-Xylene	**81**	**2,865**	**110**	**2,344**	**131**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**63**	**3,115**	**94**	**2,242**	**106**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	**6 J**	**69**	<25	**29**	<25	<25
1,3,5-Trimethylbenzene	**38**	**53**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**98**	**116**	**15 J**	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	**12 J**	**15 J**	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	TB030207	SG056	SG057	SG061	SG061 D	SG062
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030614	07030615	07030616	07030617	07030618	07030619
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Time:	16:37	17:06	17:35	18:03	18:32	19:01
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**8 J, B**	**7 J, B**	<25	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	**7 J**	**9 J**	**11 J**	**4 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**3 J**	**25**	**9 J**	**12 J**	<25
p & m-Xylene	<25	**6 J**	**23 J**	**10 J**	**12 J**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**6 J**	**17 J**	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	**18 J**	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	**47**	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	**5 J**	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG063	SG068	SG069	SG070	SG074	SG075
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030620	07030621	07030622	07030623	07030624	07030625
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/6/2007	3/6/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007
Analysis Time:	19:30	19:58	8:53	10:08	10:36	11:05
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**7 J, B**	**18 J, B**	**17 J, B**	<25	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	**5 J**	**24 J**	**8 J**	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**3 J**	<25	**74**	**7 J**	**5 J**	<25
p & m-Xylene	<25	**6 J**	**11 J**	<25	<25	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**7 J**	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**6 J**	**13 J**	**16 J**	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-		IR86-
Client Sample ID:	SG076	SG078	SG079	SG080	Meth_Blk	SG081
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030626	07030627	07030628	07030629	07030703	07030704
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007		3/6/2007
Analysis Date:	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007
Analysis Time:	11:34	12:04	12:33	13:02	15:16	15:44
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**8 J, B**	**5 J, B**	**5 J, B**	<25	**12 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**6 J**	**4 J**	**4 J**	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**8 J**	**6 J**	**4 J**	<25	<25	<25
p & m-Xylene	<25	**9 J**	**6 J**	<25	<25	**5 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**7 J**	**5 J**	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	**10 J**	**17 J**	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG082	SG084	SG085	SG086	SG086 D	SG087
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030705	07030706	07030707	07030708	07030709	07030710
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007
Analysis Time:	16:13	16:42	17:10	17:39	18:08	18:36
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	**9 J**	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	**27**	<25	<25	**23 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**5 J**	<25	**12 J**	**6 J**	<25	**13 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**4 J**	<25	**29**	**14 J**	**12 J**	**42**
p & m-Xylene	<25	<25	**45**	**17 J**	**14 J**	**21 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	**31**	**13 J**	**11 J**	**18 J**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	**41**	<25	<25	**19 J**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	**7 J**	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG089	SG090	SG091	SG092	SG093	SG095
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030711	07030712	07030713	07030714	07030715	07030716
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007
Analysis Time:	19:05	19:34	20:02	20:31	20:59	21:28
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	**18 J**	**40**	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**16 J**	**11 J**	**19 J**	**46**	**8 J**	**10 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**7 J**	**57**	**9 J**	**17 J**	**155**	**7 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	**29**	**36**	<25
p & m-Xylene	<25	<25	**7 J**	**46**	**54**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	**34**	**29**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**7 J**	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	**190**	**21 J**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	**173**	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG096	SG097	SG098	SG101	SG102	SG103
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030717	07030718	07030719	07030720	07030721	07030722
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/7/2007	3/8/2007
Analysis Time:	21:56	22:25	22:53	23:21	23:50	12:18
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	**19 J**	<25	**8 J**
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**10 J**	**26**	**14 J**	**12 J**	**9 J**	**8 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**9 J**	**14,685**	**41**	**40**	**8 J**	**21 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**682**	**18 J**	<25	<25	**18 J**
p & m-Xylene	**5 J**	**1,535**	**19 J**	**11 J**	<25	**38**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**1,259**	**16 J**	**14 J**	<25	**26**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**75**	<25	**5 J**	<25	<25
1,3,5-Trimethylbenzene	<25	**412**	<25	<25	<25	**21 J**
1,2,4-Trimethylbenzene	<25	**1,198**	**15 J**	<25	<25	**61**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	**9 J**	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG104	SG105	SG105 D	SG107	SG108	SG109
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030723	07030724	07030725	07030726	07030727	07030728
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007
Analysis Time:	12:47	1:15	1:44	2:12	2:40	3:08
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**13 J**	**13 J**	**11 J**	**9 J**	**9 J**	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**7 J**	**13 J**	**9 J**	**5 J**	**5 J**	**7 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**53**	**61**	**10 J**	**6 J**	**20 J**
p & m-Xylene	<25	**37**	**43**	**8 J**	**9 J**	**14 J**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**30**	**32**	**6 J**	**8 J**	**9 J**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	**40**	**40**	**8 J**	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	**11 J**	**5 J**	**3 J**	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-		IR86-	IR86-
Client Sample ID:	SG112	SG114	SG115	Meth_Blk	SG116	SG117
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030729	07030730	07030731	07030803	07030804	07030805
Received Date:	3/6/2007	3/6/2007	3/6/2007		3/6/2007	3/6/2007
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007
Analysis Time:	3:37	4:05	4:33	11:07	11:36	12:04
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	**8 J**	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**12 J**	**104**	**19 J**	<25	**27**	<25
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**67**	**29,295**	**147**	<25	**15 J**	**42**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**2,448**	**73**	<25	**58**	**178**
p & m-Xylene	<25	**4,905**	**223**	<25	**28**	**241**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**3,859**	**212**	<25	**21 J**	**658**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	**145**	**3 J**	<25	<25	**306**
1,3,5-Trimethylbenzene	<25	**915**	<25	<25	<25	**489**
1,2,4-Trimethylbenzene	<25	**2,823**	**17 J**	<25	**33**	**1,023**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	**6 J**	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	**22 J**
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-	
Client Sample ID:	SG118	SG123	SG125	SG130	SG130 D	SG132	
Project Number:	1976	1976	1976	1976	1976	1976	
Lab File ID:	07030806	07030807	07030808	07030809	07030810	07030811	
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	
Analysis Time:	12:33	13:01	13:30	13:58	14:27	14:55	
Units:	ng	ng	ng	ng	ng	ng	
COMPOUNDS							
Vinyl Chloride	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25	
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25	
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Chloroform	<25	**6 J**	<25	**142**	**182**	<25	
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25	
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25	
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25	
Benzene	**13 J**	<25	**6**	**J**	**7 J**	**8 J**	**6 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
Trichloroethene	<25	<25	<25	<25	<25	<25	
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25	
Toluene	**4 J**	**23 J**	**5 J**	**19 J**	**18 J**	**4 J**	
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25	
Tetrachloroethene	<25	<25	<25	<25	<25	<25	
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
Chlorobenzene	<25	<25	<25	<25	<25	**5 J**	
Ethylbenzene	**29**	<25	**10 J**	<25	<25	<25	
p & m-Xylene	**53**	<25	**12 J**	<25	<25	<25	
Bromoform	<25	<25	<25	<25	<25	<25	
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
o-Xylene	**37**	<25	**8 J**	<25	<25	<25	
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25	
Isopropylbenzene	<25	<25	<25	**7 J**	<25	<25	
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25	
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25	
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
n-Butylbenzene	<25	**85**	<25	**116**	**122**	<25	
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25	
Naphthalene	<25	<25	<25	<25	<25	<25	
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25	

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG133	SG134	SG135	SG138	SG140	SG145
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030812	07030813	07030814	07030815	07030816	07030817
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007
Analysis Time:	15:24	15:52	17:15	17:44	18:13	18:41
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	**53**
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**12 J**	**14 J**	**11 J**	**6 J**	**9 J**	**6 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**9 J**	**8 J**	**10 J**	**4 J**	**4 J**	**6 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	**21 J**	**21 J**	**80**	<25	**4 J**	<25
p & m-Xylene	**5 J**	**41**	**170**	<25	**6 J**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**24 J**	**125**	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG146	SG147	SG148	SG153	SG154	SG159
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030818	07030819	07030820	07030821	07030822	07030823
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007
Analysis Time:	19:10	19:38	20:07	20:35	21:04	21:32
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	**18 J**
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**9 J**	**7 J**	**7 J**	<25	**42**	**12 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**6 J**	**4 J**	**4 J**	**5 J**	**63**	**6 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**6 J**	<25	<25	**72**	<25
p & m-Xylene	<25	<25	<25	<25	**115**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	**107**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	**37**	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	**92**	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	**266**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	**38**	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	**16 J**	**48**	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG160	SG161	SG167	SG168	SG169	SG170
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030824	07030825	07030826	07030827	07030828	07030829
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/8/2007	3/9/2007
Analysis Time:	22:01	22:29	22:58	23:26	23:54	12:23
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	**8 J**	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	**18 J**	**18 J**	**8 J**	<25	**11 J**	**27**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**7 J**	**12 J**	**4 J**	<25	**4 J**	**22 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	**8 J**	<25
Ethylbenzene	<25	**127**	<25	<25	<25	**291**
p & m-Xylene	<25	**249**	<25	<25	<25	**643**
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**209**	<25	<25	<25	**597**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	**32**	<25	<25	<25	**44**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-
Client Sample ID:	SG179	SG180	SG183	SG184	SG185	SG189
Project Number:	1976	1976	1976	1976	1976	1976
Lab File ID:	07030830	07030831	07030832	07030833	07030834	07030835
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007
Analysis Date:	3/9/2007	3/9/2007	3/9/2007	3/9/2007	3/9/2007	3/9/2007
Analysis Time:	12:51	1:20	1:48	2:16	2:45	3:13
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**21 J**	**14 J**	**25**	**30**	**11 J**
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	**4 J**	**12 J**	**31**	**38**	**18 J**	**5 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	**145**	**907**	**222**	<25
p & m-Xylene	<25	**4 J**	**273**	**2,023**	**485**	<25
Bromoform	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	**177**	**2,087**	**443**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	**45**	**10 J**	<25
1,3,5-Trimethylbenzene	<25	<25	<25	**20 J**	**11 J**	<25
1,2,4-Trimethylbenzene	<25	**21 J**	**23 J**	**51**	**31**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
n-Butylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-	IR86-	IR86-	IR86-	IR86-	IR86-	
Client Sample ID:	SG190	SG191	SG197	SG198	SG199	SG200	
Project Number:	1976	1976	1976	1976	1976	1976	
Lab File ID:	07030836	07030837	07030838	07030839	07030840	07030841	
Received Date:	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	3/6/2007	
Analysis Date:	3/9/2007	3/9/2007	3/9/2007	3/9/2007	3/9/2007	3/9/2007	
Analysis Time:	3:41	4:10	4:38	5:06	5:35	6:03	
Units:	ng	ng	ng	ng	ng	ng	
COMPOUNDS							
Vinyl Chloride	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethene	<25	<25	<25	<25	<25	<25	
trans-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Methyl-t-butyl Ether	<25	<25	<25	<25	<25	<25	
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25	
cis-1,2-Dichloroethene	<25	<25	<25	<25	<25	<25	
Chloroform	<25	<25	<25	<25	<25	<25	
2,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25	
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25	
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25	
Benzene	<25	<25	**15 J**	<25	**18 J**	<25	
1,2-Dichloropropane	<25	<25	<25	<25	<25	<25	
Trichloroethene	<25	<25	<25	**28**	<25	<25	
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25	
Toluene	**10 J**	<25	**5**	**J**	**5 J**	**8 J**	**5 J**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25	
Tetrachloroethene	<25	<25	<25	<25	<25	<25	
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
Chlorobenzene	<25	<25	<25	<25	<25	<25	
Ethylbenzene	<25	<25	<25	<25	<25	<25	
p & m-Xylene	<25	<25	<25	<25	<25	<25	
Bromoform	<25	<25	<25	<25	<25	<25	
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25	
o-Xylene	<25	<25	<25	<25	<25	<25	
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25	
Isopropylbenzene	<25	<25	<25	<25	<25	<25	
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25	
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25	
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25	
n-Butylbenzene	<25	<25	<25	<25	<25	<25	
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25	
Naphthalene	<25	<25	<25	<25	<25	<25	
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25	

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

Table E2

Beacon Environmental Services, Inc.
323 Williams Street, Ste. D
Bel Air, MD 21014

Analysis by EPA Method 8260B (Modified)

Sample ID Prefix:	IR86-
Client Sample ID:	SG201
Project Number:	1976
Lab File ID:	07030842
Received Date:	3/6/2007
Analysis Date:	3/9/2007
Analysis Time:	6:31
Units:	ng

COMPOUNDS	
Vinyl Chloride	<25
1,1-Dichloroethene	<25
trans-1,2-Dichloroethene	<25
Methyl-t-butyl Ether	<25
1,1-Dichloroethane	<25
cis-1,2-Dichloroethene	<25
Chloroform	<25
2,2-Dichloropropane	<25
1,2-Dichloroethane	<25
1,1,1-Trichloroethane	<25
Carbon Tetrachloride	<25
Benzene	**10 J**
1,2-Dichloropropane	<25
Trichloroethene	<25
1,1,2-Trichloroethane	<25
Toluene	**4 J**
1,2-Dibromoethane (EDB)	<25
Tetrachloroethene	<25
1,1,1,2-Tetrachloroethane	<25
Chlorobenzene	<25
Ethylbenzene	**126**
p & m-Xylene	**297**
Bromoform	<25
1,1,2,2-Tetrachloroethane	<25
o-Xylene	**187**
1,2,3-Trichloropropane	<25
Isopropylbenzene	<25
1,3,5-Trimethylbenzene	<25
1,2,4-Trimethylbenzene	<25
1,3-Dichlorobenzene	<25
1,4-Dichlorobenzene	<25
1,2-Dichlorobenzene	<25
n-Butylbenzene	<25
1,2,4-Trichlorobenzene	<25
Naphthalene	<25
1,2,3-Trichlorobenzene	<25

Results in nanograms (ng). J = Estimated value below reported quantitation level. B = Detected in method blank.

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\APPENDIX\FIGURE_E2-1_PASSIVESOILGASSURVEYRESULTS_TOTAL_CHLORINATED_SOLVENTS.MXD MRISSING 7/21/2010 12:02:38

Legend

- Passive Soil Gas Locations
- 1 - 10
- 10 - 100
- 100 - 1,000
- 1000 - 7,000
- > 7,000
- August 2006 Site 86 Boundary
- Original Site 86 Boundary

The following locations were eliminated in the field and are not shown on the figure: IR86-SG015, IR86-SG064, IR86-SG100, IR86-SG113, IR86-SG124, and IR86-SG139

N

0 110 220 Feet

Figure E2-1
Passive Soil Gas Survey Results- Total Chlorinated Solvents
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\APPENDIX\FIGURE_E2-2_PASSIVESOILGASSURVEYRESULTS_TOTAL_PETROLEUM_HYDROCARBONS.MXD MRISSING 7/21/2010 12:07:26

Legend

- Passive Soil Gas Survey Locations
- 100 - 1,000
- 1,000 - 10,000
- > 10,000
- August 2006 Site 86 Boundary
- Original Site 86 Boundary

The following locations were eliminated in the field and are not shown on the figure: IR86-SG015, IR86-SG064, IR86-SG100, IR86-SG113, IR86-SG124, and IR86-SG139

N

0 110 220 Feet

Figure E2-2
Passive Soil Gas Survey Results- Total Petroleum Hydrocarbons
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS48				IR86-IS49			IR86-IS50		
Sample ID				IR86-GW-IS48-22-27-07B	IR86-GW-IS48-47-53-07B	IR86-GW-IS48D-47-53-07B	IR86-GW-IS48-55-60-07B	IR86-GW-IS49-22-27-07B	IR86-GW-IS49-47-53-07B	IR86-GW-IS49-55-60-07B	IR86-GW-IS50-22-27-07B	IR86-GW-IS50-47-53-07B	IR86-GW-IS50-55-60-07B
Sample Date				06/28/07	06/28/07	06/28/07	06/28/07	06/28/07	06/28/07	06/28/07	06/27/07	06/27/07	06/27/07
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	--	4,000	710	2.5 U	2.5 U	2.5 U	1.8 J	2.5 U	2.5 U	2.6	1.6 J	2.5 U	2.5 U
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.11 J	0.11 J	0.5 U	0.1 J	0.14 J	0.5 U	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.31 J	0.14 J	0.23 J	0.5 U	0.14 J	0.13 J	0.17 J	0.52	0.23 J	0.58
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.2 J	0.27 J	0.25 J	0.5 U	0.64	0.29 J	0.5 U	0.13 J	0.31 J
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	--	5	4.8	0.26 J	0.24 J	0.25 J	0.32 J	0.27 J	0.23 J	0.25 J	0.13 J	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m-Xylene	--	500	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5	0.34 J	0.55	0.37 J	0.43 J	0.62	0.44 J	0.47 J	0.34 J	0.45 J
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conservative.

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS53			IR86-IS54			IR86-IS55		
Sample ID				IR86-GW-IS53-20-24-07B	IR86-GW-IS53-47-53-07B	IR86-GW-IS53-55-60-07B	IR86-GW-IS54-22-27-07B	IR86-GW-IS54-47-53-07B	IR86-GW-IS54-55-60-07B	IR86-GW-IS55-22-27-07B	IR86-GW-IS55-47-53-07B	IR86-GW-IS55-55-60-07B
Sample Date				06/12/07	06/12/07	06/12/07	06/12/07	06/12/07	06/13/07	06/11/07	06/11/07	06/11/07
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.99	0.5 U	0.5 U	0.9	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J
1,1-Dichloroethene	--	7	34	1.6	0.5 U	0.5 U	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	--	4,000	710	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	8.5	0.38 J	0.21 J	4.9	0.1 J	0.19 J	0.8	0.84	0.26 J
Carbon disulfide	--	700	100	0.1 J	0.5 U	0.5 U	0.5 U	0.15 J	0.16 J	0.15 J	0.5 U	0.5 U
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.1	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	14	0.25 J	0.5 U	9.5	0.5 U	0.2 J	0.24 J	0.53	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.12 JB	0.11 JB	0.14 JB	0.13 JB	0.14 JB	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.17 J	0.34 J	0.15 J	0.5 U	0.89	0.43 J	0.5 U	0.5 U	0.22 J
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	--	5	4.8	0.32 JB	0.4 JB	0.38 JB	0.36 JB	0.45 JB	0.37 JB	0.4 JB	0.41 JB	0.59 B
Methyl-tert-butyl ether (MTBE)	--	20	13	0.95	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U
m-Xylene	--	500	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	--	500	120	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.26 J	0.26 J	0.14 J	0.17 J	0.42 J	0.29 J	0.1 J	0.5 U	0.12 J
trans-1,2-Dichloroethene	--	100	11	0.14 J	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	55	0.33 J	0.17 J	3.1	0.5 U	0.18 J	0.5 U	0.5 U	0.21 J
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)												
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry												
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS56			IR86-IS57			IR86-IS58		
Sample ID				IR86-GW-IS56-22-27-07B	IR86-GW-IS56-47-53-07B	IR86-GW-IS56-55-60-07B	IR86-GW-IS57-22-27-07B	IR86-GW-IS57-47-53-07B	IR86-GW-IS57-55-60-07B	IR86-GW-IS58-22-27-07B	IR86-GW-IS58-47-53-07B	IR86-GW-IS58-55-60-07B
Sample Date				06/29/07	06/29/07	06/29/07	06/29/07	06/29/07	06/29/07	06/27/07	06/27/07	06/27/07
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	1.7 J	2.5 U	0.5 U	42	7.4	0.5 U	310	0.5 U	0.3 J
1,1-Dichloroethane	--	6	2.4	3.1 J	2.5 U	0.5 U	3	0.5 U	0.5 U	0.27 J	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3	1.6	0.5 U
1,2-Dichlorobenzene	--	20	37	5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	--	4,000	710	25 U	13 U	3.7	1.1 J	0.86 J	3	2.5 U	1.6 J	3.1
2-Hexanone	--	--	4.7	25 U	13 U	2.5 U	2.5 U	2.5 U	1.2 J	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone	--	--	200	25 U	13 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	140	19	0.23 J	0.57	7.1	0.24 J	0.59	0.69	0.32 J
Carbon disulfide	--	700	100	1.6 J	2.5 U	0.5 U	0.5 U	0.12 J	0.5 U	1	0.29 J	0.27 J
Chlorobenzene	--	50	9.1	5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	5 U	2.5 U	1.2	0.5 U	0.5 U	0.89	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	8.6	67	0.5 U	19	44	0.68	290	200	16
Cyclohexane	--	--	1,300	5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	5 U	2.5 U	0.5 U	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	86	0.66 J	0.31 J	1.1	1.4	0.32 J	1.5	0.5	0.34 J
Isopropylbenzene	--	70	68	3.6 J	2.5 U	0.5 U	0.31 J	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U
Methylene chloride	--	5	4.8	2.2 J	0.7 J	0.26 J	0.15 J	0.23 J	0.5 U	0.14 J	0.5 U	0.15 J
Methyl-tert-butyl ether (MTBE)	--	20	13	5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m-Xylene	--	500	120	150	5 U	0.37 J	0.63 J	0.79 J	0.32 J	3.3	1 U	0.35 J
o-Xylene	--	500	120	96	2.5 U	0.2 J	1.2	0.43 J	0.17 J	2.1	0.5 U	0.1 J
Styrene	--	70	160	2.2 J	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	5 U	2.5 U	0.5 U	0.74	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	200	0.95 J	0.71	2.3 B	0.5	0.5	15	0.55	0.65
trans-1,2-Dichloroethene	--	100	11	5 U	2.5 U	0.5 U	0.21 J	0.5 U	0.5 U	0.23 J	0.18 J	0.5 U
Trichloroethene	--	3	2	5 U	2.5 U	0.5 U	4.9	0.5 U	0.27 JB	180	58	1.5
Vinyl chloride	--	0.03	0.016	5.2	2.4 J	0.5 U	5.3	1.9	0.5 U	55	14	1.8
Xylene, total	--	500	20	250	2.5 U	0.58	1.9	1.3	0.51	5.6	0.5 U	0.47 J
Total Metals (µg/L)												
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry												
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2× Mean	NC2LGW (January 2010)*	Adjusted Tap Water RSLs	IR86-IS59				IR86-IS60			IR86-IS61		
Sample ID				IR86-GW-IS59-22-27-07B	IR86-GW-IS59-47-53-07B	IR86-GW-IS59D-47-53-07B	IR86-GW-IS59-55-60-07B	IR86-GW-IS60-22-27-07B	IR86-GW-IS60-47-53-07B	IR86-GW-IS60-55-60-07B	IR86-GW-IS61-22-27-07B	IR86-GW-IS61-47-53-07B	IR86-GW-IS61-55-60-07B
Sample Date				06/27/07	06/27/07	06/27/07	06/27/07	06/26/07	06/26/07	06/26/07	06/26/07	06/26/07	06/26/07
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	--	4,000	710	1.5 J	1.5 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	1.3 J
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.5 U	0.11 J	0.1 J	0.5 U	0.5 U	0.12 J	0.5 U	1.2	0.11 J	0.5 U
Carbon disulfide	--	700	100	0.58	0.26 J	0.3 J	0.13 J	0.86	0.36 J	0.5 U	0.82	0.3 J	0.32 J
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.25 J	0.23 J	0.62	0.5 U	0.17 J	0.78	0.65	0.31 J	0.36 J
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	--	5	4.8	0.5 U	0.13 J	0.5 U	0.14 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m-Xylene	--	500	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.4 J	0.61	0.39 J	0.63	0.33 J	0.38 J	0.59	0.62	0.33 J	0.38 J
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS62			IR86-IS63			
Sample ID				IR86-GW-IS62-22-27-07B	IR86-GW-IS62-47-53-07B	IR86-GW-IS62-55-60-07B	IR86-GW-IS63-22-27-07B	IR86-GW-IS63D-22-27-07B	IR86-GW-IS63-47-53-07B	IR86-GW-IS63-55-60-07B
Sample Date				06/27/07	06/27/07	06/27/07	06/29/07	06/29/07	06/29/07	06/29/07
Chemical Name										
Volatile Organic Compounds (µg/L)										
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	1.1	0.91 J	0.5 U	1.6 U
1,1-Dichloroethene	--	7	34	0.5 U	1.3	0.17 J	0.43 J	0.34 J	**42**	0.51 J
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.29 J	0.27 J	0.1 J	1.6 U
2-Butanone	--	4,000	710	2.5 U	1.9 J	2.5 U	5 U	5 U	2.3 J	6.6 J
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	5 U	1 J	2.5 U	2.2 J
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	5 U	5 U	0.64 J	7.8 U
Benzene	--	1	0.41	0.5 U	**5.6**	0.89	0.32 J	0.28 J	**1.5**	**1.3 J**
Carbon disulfide	--	700	100	0.42 J	0.36 J	0.14 J	0.44 J	0.37 J	0.69	1.6 U
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.23 J	1 U	0.5 U	1.6 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	1 U	1 U	0.28 J	1.4 J
cis-1,2-Dichloroethene	--	70	37	0.5 U	**310**	57	36	31	**460**	46
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Ethylbenzene	--	600	1.5	0.5 U	0.15 J	0.31 J	1 U	1 U	0.15 J	1.6 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Methylene chloride	--	5	4.8	0.5 U	0.25 J	0.25 J	0.6 J	0.67 J	0.2 J	1.1 J
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
m-Xylene	--	500	120	1 U	1 U	1 U	2 U	2 U	1 U	3.1 U
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Toluene	--	600	230	0.25 J	0.39 J	0.29 J	0.67 J	0.63 J	0.81 B	0.63 J
trans-1,2-Dichloroethene	--	100	11	0.5 U	5.1	0.15 J	0.5 J	0.42 J	170 R	1.1 J
Trichloroethene	--	3	2	0.14 J	0.44 J	0.5 U	19	15	220	1 J
Vinyl chloride	--	0.03	0.016	0.5 U	5.2	0.87	3.8	2.9	130	72
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	1.6 U
Total Metals (µg/L)										
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry										
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents
* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons
µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate
Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS64				IR86-IS65			
Sample ID				IR86-GW-IS64-22-27-07B	IR86-GW-IS64-47-53-07B	IR86-GW-IS64-55-60-07B	IR86-GW-IS64D-47-53-07B	IR86-GW-IS65-22-27-07B	IR86-GW-IS65-47-53-07B	IR86-GW-IS65-55-60-07B	IR86-GW-IS65D-55-60-07B
Sample Date				06/11/07	06/12/07	06/12/07	06/12/07	06/13/07	06/13/07	06/13/07	06/13/07
Chemical Name											
Volatile Organic Compounds (µg/L)											
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone	--	4,000	710	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	2.5 U	0.75 J	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	--	1	0.41	0.21 J	0.35 J	0.12 J	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	--	700	100	0.66	0.42 J	0.23 J	0.45 J	0.74	0.62	0.12 J	0.12 J
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	0.2 J	0.28 J	0.12 J	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.12 JB	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.49 J	0.55	0.52	0.5 U	0.24 J	0.27 J	0.25 J
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	--	5	4.8	0.45 JB	0.5 B	0.44 JB	0.46 JB	0.4 JB	0.35 JB	0.45 JB	0.44 JB
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m-Xylene	--	500	120	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.27 J	0.29 J	0.3 J	0.12 J	0.2 J	0.24 J	0.27 J
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals (µg/L)											
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry											
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Shading indicates exceedance of two times the mean base background concentration for Groundwater
Bold box indicates exceedance of NCGWQS or the more conservative MCL
Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-IS66			IR86-IS67				IR86-GW15IW	IR86-MW15DW	IR86-GW16IW
Sample ID				IR86-GW-IS66-22-27-07B	IR86-GW-IS66-47-53-07B	IR86-GW-IS66-55-60-07B	IR86-GW-IS67-22-27-07B	IR86-GW-IS67D-22-27-07B	IR86-GW-IS67-47-53-07B	IR86-GW-IS67-55-60-07B	IR86-GW15IW-07D	IR86-GW15DW-07D	IR86-GW16IW-07D
Sample Date				06/26/07	06/26/07	06/26/07	06/28/07	06/28/07	06/28/07	06/28/07	12/05/07	12/05/07	12/05/07
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
1,2-Dichlorobenzene	--	20	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
2-Butanone	--	4,000	710	2.5 U	2.5 U	1.4 J	2.5 U	2.5 U	2 J	3.7	50 U	10 U	10 U
2-Hexanone	--	--	4.7	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	50 U	10 U	10 U
4-Methyl-2-pentanone	--	--	200	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	50 U	10 U	10 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.21 J	0.5 U	0.5 U	7.5	0.37 J	50 U	10 U	10 U
Carbon disulfide	--	700	100	0.36 J	0.27 J	0.23 J	0.3 J	0.34 J	0.18 J	0.5 U	50 U	10 U	10 U
Chlorobenzene	--	50	9.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	3	0.5 U	0.5 U	2.4	0.48 J	440	10 U	3 J
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Ethylbenzene	--	600	1.5	0.5 U	0.41 J	0.21 J	0.5 U	0.5 U	0.37 J	0.44 J	50 U	10 U	10 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Methylene chloride	--	5	4.8	0.5 U	0.5 U	0.5 U	0.23 J	0.34 J	0.24 J	0.37 J	50 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
m-Xylene	--	500	120	1 U	1 U	1 U	1 U	1 U	1 U	0.21 J	NA	NA	NA
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J	NA	NA	NA
Styrene	--	70	160	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	10 U	10 U
Toluene	--	600	230	0.47 J	0.47 J	0.47 J	0.49 J	0.64	0.83	0.67	50 U	10 U	10 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J	0.5 U	14 J	10 U	10 U
Trichloroethene	--	3	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3	0.5 U	50 U	10 U	3 J
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 J	10 U	10 U
Xylene, total	--	500	20	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.34 J	50 U	10 U	10 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	NA	NA	NA	NA	NA	NA	NA	4,210	647	4,240
Manganese	214	50	88	NA	NA	NA	NA	NA	NA	NA	50.9	51.9	57.1
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	230	163	183
Chloride (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	10.8	14.6	11.8
Ethane (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	2 U	2 U	2 U
Ethene (µg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	2 U	2 U	2 U
Ferric iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	0.5 J	0.4 UJ	0.27 J
Ferrous iron (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	3.71 J	0.81 J	3.97 J
Methane (ug/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	34	4	26
Nitrate (mg/L)	--	10	--	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U
Sulfate (mg/L)	--	250	--	NA	NA	NA	NA	NA	NA	NA	3.44 J	3.75 J	9.09
Sulfide (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW16DW		IR86-MW17DW	IR86-MW18DW	IR86-MW19DW	IR86-MW20IW	IR86-MW22IW	IR86-MW23IW	IR86-MW24IW	IR86-GW25IW	IR86-MW26IW	IR86-MW27IW
Sample ID				IR86-GW16DW-07D	IR86-GW16DWD-07D	IR86-GW17DW-07D	IR86-GW18DW-07D	IR86-GW19DW-07D	IR86-GW20IW-07D	IR86-GW22IW-07D	IR86-GW23IW-07D	IR86-GW24IW-07D	IR86-GW25IW-07D	IR86-GW26IW-07D	IR86-GW27IW-07D
Sample Date				12/05/07	12/08/07	12/09/07	12/06/07	12/08/07	12/06/07	12/04/07	12/09/07	12/07/07	12/07/07	12/07/07	12/07/07
Chemical Name															
Volatile Organic Compounds (µg/L)															
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	140 J	10 UJ	6 J
1,1-Dichloroethane	--	6	2.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	4 J	10 U	10 U
1,1-Dichloroethene	--	7	34	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30	10 U	10 U
1,2-Dichlorobenzene	--	20	37	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	10 U
2-Butanone	--	4,000	710	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	--	--	4.7	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--	--	200	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	--	1	0.41	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	10 U	10 U
Carbon disulfide	--	700	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	--	50	9.1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	--	3	19	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	--	70	37	10 U	10 U	10 U	10 U	10 U	25	3 J	89	2 J	38	10 U	42
Cyclohexane	--	--	1,300	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	10 U	10 U	10 U	40
Dichlorodifluoromethane (Freon-12)	--	1,000	40	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6 J	10 U	10 U
Ethylbenzene	--	600	1.5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene	--	70	68	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	--	5	4.8	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	--	20	13	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	70	160	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	--	0.7	0.11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	--	600	230	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	--	100	11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	--	3	2	10 U	10 U	10 U	10 U	10 U	57	10 U	10 U	10 U	40	10 U	51
Vinyl chloride	--	0.03	0.016	10 U	10 U	10 U	10 U	10 U	10 U	10 U	13	10 U	6 J	10 U	7 J
Xylene, total	--	500	20	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Metals (µg/L)															
Iron	5,999	300	2,600	1,070	920	108	164 J	326	4,390 J	3,360	3,040	3,510 J	2,980 J	1,960 J	4,360 J
Manganese	214	50	88	61.6	61.3	9.1 U	12.3 J	28.1	56.4 J	42.1	44.4	59.4 J	58.9 J	46 J	74.7 J
Wet Chemistry															
Alkalinity (mg/L)	--	--	--	198	176	264 J	229 J	189 J	164 J	190	189 J	197 J	12.6 J	197 J	89.2 J
Chloride (mg/L)	--	250	--	36.1	34	88	71.8	50.1	9.81	11.9	8.14	9.34	15.1	10.3	18.7
Ethane (µg/L)	--	--	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ethene (µg/L)	--	--	--	2 U	2 U	2 U	2 U	2 U	2 U	0.3 J	2 U	2 U	2 U	2 U	2 U
Ferric iron (mg/L)	--	--	--	0.57 J	0.42 J	0.4 UJ	0.164 J	0.4 UJ	0.15 J	0.4 UJ	0.35 J	3.51 J	0.15 J	0.4 UJ	0.4 UJ
Ferrous iron (mg/L)	--	--	--	0.5 J	0.5 J	0.15 J	0.4 UJ	0.4 UJ	4.24 J	3.31 J	2.69 J	0.4 UJ	2.83 J	1.85 J	4.49 UJ
Methane (ug/L)	--	--	--	5	6	3 J	7	7	57	100	11 J	85	33	140	59
Nitrate (mg/L)	--	10	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (mg/L)	--	250	--	6.81	6.78	12.7	11.3	93.3	2.01 J	1.15 J	1.78 J	0.94 J	22.8	1.87 J	37
Sulfide (mg/L)	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.8	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.39 J	5 U	4.18 J

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-GW29IW	IR86-MW30IW	IR86-GW31DW	IR86-MW31IW		IR86-MW34IW	IR86-MW39	IR86-MW40	IR86-MW41	IR86-MW42DW
Sample ID				IR86-GW29IW-07D	IR86-GW30IW-07D	IR86-GW31DW-07D	IR86-GW31IW-07D	IR86-GW31IWD-07D	IR86-GW34IW-07D	IR86-GW39-07D	IR86-GW40-07D	IR86-GW41-07D	IR86-GW42DW-07D
Sample Date				12/05/07	12/09/07	12/04/07	12/05/07	12/05/07	12/09/07	12/08/07	12/08/07	12/07/07	12/06/07
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	54	10 U
1,1-Dichloroethane	--	6	2.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	--	7	34	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	--	20	37	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	--	4,000	710	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
2-Hexanone	--	--	4.7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
4-Methyl-2-pentanone	--	--	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
Benzene	--	1	0.41	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	--	700	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	--	50	9.1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	--	3	19	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	--	70	37	53	81	10 U	3 J	6 J	5 J	10 U	12	5 J	10 U
Cyclohexane	--	--	1,300	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	--	600	1.5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene	--	70	68	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	--	5	4.8	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	--	20	13	10 U	10 U	10 U	10 U	10 U	10 U	22	10 U	10 U	10 U
m-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	70	160	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	--	0.7	0.11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	--	600	230	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	--	100	11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	--	3	2	280 J	9 J	10 U	5 J	8 J	11	10 U	29	10	10 U
Vinyl chloride	--	0.03	0.016	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, total	--	500	20	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	4,680	3,350	259	2,430	2,130	2,820	5,800	8,170	14,300 J	308 J
Manganese	214	50	88	67.7	52.3	38.8	101	98.5	63.3	30.2	108	176 J	54.6 J
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	285	197 J	183	237	240	311 J	78 J	10 UJ	342 J	48.2 J
Chloride (mg/L)	--	250	--	17.1	7.74	41.2	28	32.8	14.6	25.5	69.5	11.7	8.32
Ethane (µg/L)	--	--	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.05 J	2 U
Ethene (µg/L)	--	--	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ferric iron (mg/L)	--	--	--	0.44 J	0.22 J	0.4 UJ	1.93 J	1.63 J	2.15 J	0.51 J	0.59 J	7.51 J	0.4 UJ
Ferrous iron (mg/L)	--	--	--	4.24 J	3.13 J	0.25 J	0.5 J	0.5 J	0.67 J	5.29 J	7.58 J	6.79 J	0.2 J
Methane (ug/L)	--	--	--	73	26 J	2	24	28	4 J	38	18	56	4
Nitrate (mg/L)	--	10	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.645
Sulfate (mg/L)	--	250	--	15.6	3.23 J	8.36	127	105	220	43.6	53	136	12.7
Sulfide (mg/L)	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	0.6 J	1 U	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	--	5 U	5 U	5 U	5 U	5 U	2 J	2.08 J	2.14 J	5 U	5 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW42IW				IR86-MW43IW	IR86-MW44DW	IR86-MW44IW				IR86-MW45DW	IR86-MW46IW
Sample ID				IR86-GW42IW-07D-X	IR86-GW42IWD-07D-X	IR86-GW42IW-08A	IR86-GW42IWD-08A	IR86-GW43IW-07D	IR86-GW44DW-07D	IR86-GW44IW-07D-X	IR86-GW44IWD-07D-X	IR86-GW44IW-08A	IR86-GW44IWD-08A	IR86-GW45DW-07D	IR86-GW46IW-07D
Sample Date				12/06/07	12/06/07	02/05/08	02/05/08	12/04/07	12/08/07	12/04/07	12/04/07	02/05/08	02/05/08	12/09/07	12/08/07
Chemical Name															
Volatile Organic Compounds (µg/L)															
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	--	6	2.4	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	--	7	34	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	--	20	37	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	--	4,000	710	10 UJ	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	--	--	4.7	10 UJ	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--	--	200	10 UJ	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	--	1	0.41	9 J	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	--	700	100	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	--	50	9.1	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	--	3	19	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	--	70	37	10 UJ	65 J	70	65	10 U	10 U	10 UJ	150 J	120	110	10 U	10 U
Cyclohexane	--	--	1,300	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	--	600	1.5	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene	--	70	68	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	--	5	4.8	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	--	20	13	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	70	160	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	--	0.7	0.11	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	--	600	230	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	--	100	11	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	--	3	2	6 J	250 J	280	280	10 U	10 U	10 UJ	29 J	30	24	10 U	10 U
Vinyl chloride	--	0.03	0.016	10 U	25 UJ	5 J	4 J	10 U	10 U	10 UJ	21 J	22	18	10 U	10 U
Xylene, total	--	500	20	10 U	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Metals (µg/L)															
Iron	5,999	300	2,600	8,830 J	6,910 J	7,960 J	7,830 J	5,760	76 U	6,470	5,190	4,740 J	5,090 J	46.4 U	2,320
Manganese	214	50	88	89.1 J	76 J	81.7 J	81.3 J	71.1	35	72.9	63.3	58.4 J	60.8 J	7.1 U	27.6
Wet Chemistry															
Alkalinity (mg/L)	--	--	--	85.9 J	227 J	221	224	260	213 J	176	177	192	195	186 J	169 J
Chloride (mg/L)	--	250	--	6.65 J	21.1 J	18.9	18.5	11.1	57	11.3	11	10.4	9.02	30.6	7.92
Ethane (µg/L)	--	--	--	0.06 J	2 U	2 U	2 U	0.04 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ethene (µg/L)	--	--	--	2 U	2 U	2 U	0.2 J	2 U	2 U	0.4 J	0.4 J	0.4 J	0.3 J	2 U	2 U
Ferric iron (mg/L)	--	--	--	0.12 J	3.28 J	2.16 J	0.88 J	0.67 J	0.4 UJ	6.47 J	1.78 J	1.48 J	1.97 J	0.4 UJ	0.4 UJ
Ferrous iron (mg/L)	--	--	--	8.68 J	3.63 J	5.8 J	6.95 J	5.09 J	0.4 UJ	0.4 UJ	3.41 J	3.26 J	3.12 J	0.4 UJ	2.26 UJ
Methane (ug/L)	--	--	--	37 J	3 J	14	20	10	6	67	86	38	43	4 J	7
Nitrate (mg/L)	--	10	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (mg/L)	--	250	--	39 J	3.73 J	0.99 J	0.825 J	9.44	5 U	0.835 J	0.92 J	0.945 J	0.96 J	9.73	18.4
Sulfide (mg/L)	--	--	--	1 U	1 U	1 U	1 U	0.8 J	1 U	0.8 J	0.6 J	1 U	0.6 J	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	--	1.74 J	5 U	5 U	5 U	3.73 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E3
Supplemental Remedial Investigation Phase I (2007) Groundwater Analytical Data
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 2(
MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW47		IR86-MW47IW		IR86-MW48	IR86-MW48IW	IR86-MW49DW	IR86-MW50IW	IR86-MW51DW	IR86-AS428-MW05
Sample ID				IR86-GW47-07D-X	IR86-GW47-08A	IR86-GW47IW-07D	IR86-GW47IWD-07D	IR86-GW48-07D	IR86-GW48IW-07D	IR86-GW49DW-07D	IR86-GW50IW-07D	IR86-GW51DW-07D	IR86-AS428-GW05-07D
Sample Date				12/06/07	02/05/08	12/06/07	12/06/07	12/04/07	12/04/07	12/04/07	12/08/07	12/05/07	12/09/07
Chemical Name													
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	25 UJ	10 U	10 U	10 U	10 U	75	10 U	10 U	10 U	10 UJ
1,1-Dichloroethane	--	6	2.4	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	--	7	34	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	--	20	37	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	--	4,000	710	25 UJ	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 U
2-Hexanone	--	--	4.7	25 UJ	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 U
4-Methyl-2-pentanone	--	--	200	25 UJ	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 U
Benzene	--	1	0.41	25 UJ	7 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	--	700	100	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	--	50	9.1	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	--	3	19	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	--	70	37	65 J	10 U	10 U	10 U	2 J	94	10 U	10 U	10 U	6 J
Cyclohexane	--	--	1,300	25 UJ	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	--	1,000	40	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	--	600	1.5	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene	--	70	68	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	--	5	4.8	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl-tert-butyl ether (MTBE)	--	20	13	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	--	500	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	--	70	160	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	--	0.7	0.11	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	--	600	230	25 UJ	10 U	10 U	10 U	10 U	19	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	--	100	11	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	--	3	2	250 J	5 J	10 U	10 U	10 U	270 J	10 U	10 U	10 U	10 U
Vinyl chloride	--	0.03	0.016	25 UJ	10 U	10 U	10 U	10 U	81	16	10 U	10 U	10 U
Xylene, total	--	500	20	25 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Metals (µg/L)													
Iron	5,999	300	2,600	7,240 J	6,690 J	2,940 J	2,820 J	7,390	4,630	44.5 U	5,380	142 J	3,520 J
Manganese	214	50	88	80 J	58.9 J	32.5 J	30.9 J	67.6	68.1	59.3	77.4	31.2 J	44.8 J
Wet Chemistry													
Alkalinity (mg/L)	--	--	--	229 J	90.2	177 J	176 J	30.3	222	185	269 J	227 J	284 J
Chloride (mg/L)	--	250	--	20.9	5.31	7.87	8.03	13.8	17	19.6	11.3	87.8	12
Ethane (µg/L)	--	--	--	2 U	2 U	2 U	0.2 J	0.1 J	0.5 J	2 U	0.3 J	2 U	2 U
Ethene (µg/L)	--	--	--	0.2 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ferric iron (mg/L)	--	--	--	2.75 J	0.69 J	0.4 UJ	0.4 UJ	0.51 J	2.65 J	0.4 UJ	5.38 J	0.4 UJ	0.4 UJ
Ferrous iron (mg/L)	--	--	--	4.49 J	6 J	2.97 J	3.07 J	6.88 J	1.98 J	0.4 UJ	0.4 UJ	0.4 UJ	8.73 J
Methane (ug/L)	--	--	--	22	22	3 J	25 J	160	230	2	21	6	24 J
Nitrate (mg/L)	--	10	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (mg/L)	--	250	--	4.01 J	42.4	3.65 J	2.79 J	1.93 J	6.76	5	16.8	17.1	2.45 J
Sulfide (mg/L)	--	--	--	1 U	1 U	1 U	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U
Total organic carbon (TOC) (mg/L)	--	--	--	1.83 J	5 U	5 U	5 U	3.81 J	2.25 J	5 U	3.8 J	5 U	5 U

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

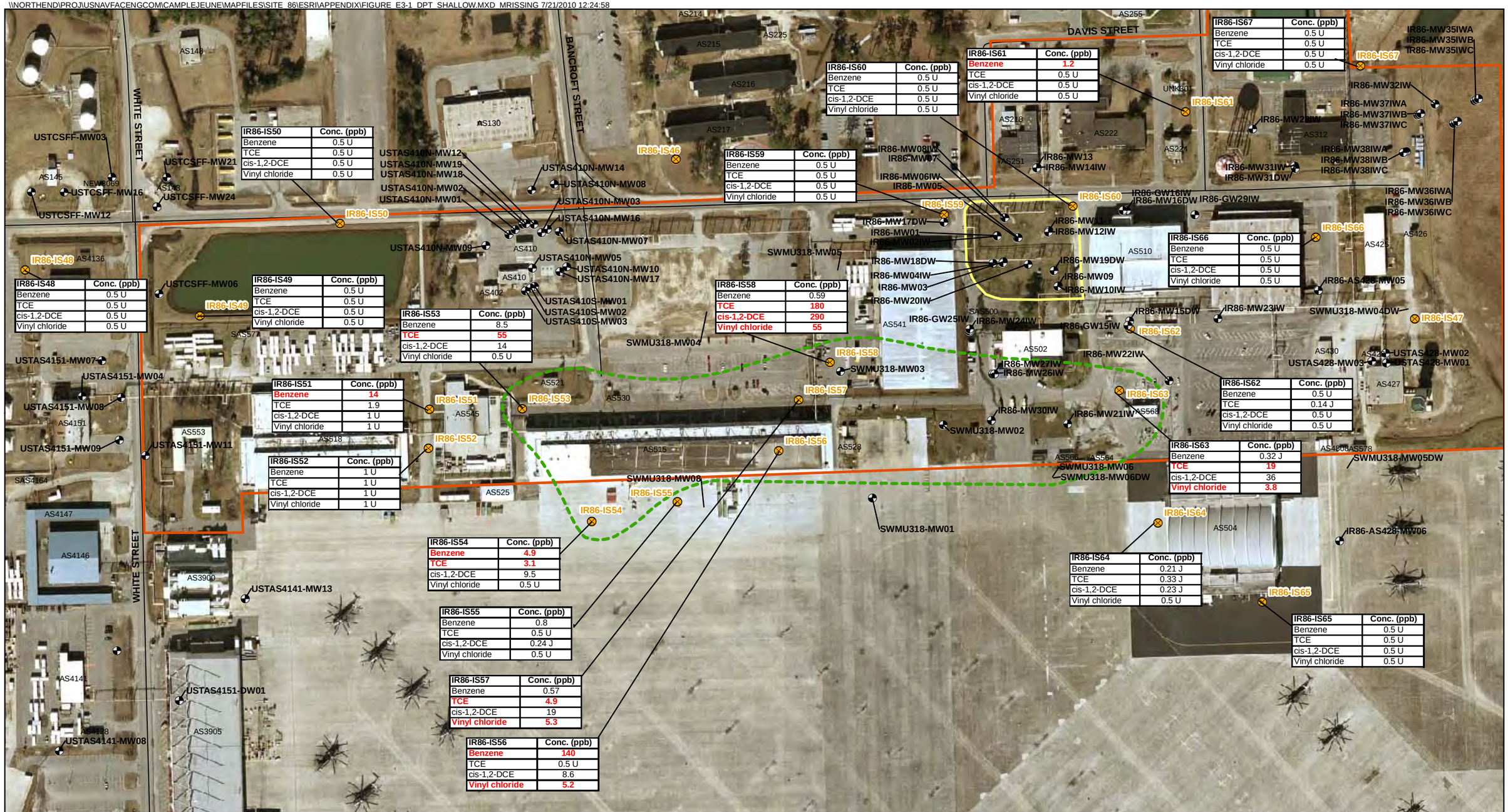
RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more cons

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\APPENDIX\FIGURE_E3-1_DPT_SHALLOW.MXD MRISSING 7/21/2010 12:24:58



IR86-IS48	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS49	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS50	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS51	Conc. (ppb)
Benzene	**14**
TCE	1.9
cis-1,2-DCE	1 U
Vinyl chloride	1 U

IR86-IS52	Conc. (ppb)
Benzene	1 U
TCE	1 U
cis-1,2-DCE	1 U
Vinyl chloride	1 U

IR86-IS53	Conc. (ppb)
Benzene	8.5
TCE	**55**
cis-1,2-DCE	14
Vinyl chloride	0.5 U

IR86-IS54	Conc. (ppb)
Benzene	**4.9**
TCE	**3.1**
cis-1,2-DCE	9.5
Vinyl chloride	0.5 U

IR86-IS55	Conc. (ppb)
Benzene	0.8
TCE	0.5 U
cis-1,2-DCE	0.24 J
Vinyl chloride	0.5 U

IR86-IS56	Conc. (ppb)
Benzene	**140**
TCE	0.5 U
cis-1,2-DCE	8.6
Vinyl chloride	**5.2**

IR86-IS57	Conc. (ppb)
Benzene	0.57
TCE	**4.9**
cis-1,2-DCE	19
Vinyl chloride	**5.3**

IR86-IS58	Conc. (ppb)
Benzene	0.59
TCE	**180**
cis-1,2-DCE	**290**
Vinyl chloride	**55**

IR86-IS59	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS60	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS61	Conc. (ppb)
Benzene	**1.2**
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS62	Conc. (ppb)
Benzene	0.5 U
TCE	0.14 J
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS63	Conc. (ppb)
Benzene	0.32 J
TCE	**19**
cis-1,2-DCE	36
Vinyl chloride	**3.8**

IR86-IS64	Conc. (ppb)
Benzene	0.21 J
TCE	0.33 J
cis-1,2-DCE	0.23 J
Vinyl chloride	0.5 U

IR86-IS65	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS66	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS67	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

Legend

- Monitoring Wells
- DPT Locations
- Estimate of 2L Exceedance for any Chlorinated VOC - Shallow
- August 2006 Site 86 Boundary
- Original Site 86 Boundary

Note:
TCE - Trichloroethene
DCE - Dichloroethene
ppb - parts per billion
U - Analyte not detected
J - Estimated value
Concentrations in **red bold** text exceed the NCGWQS for the respective analyte

N

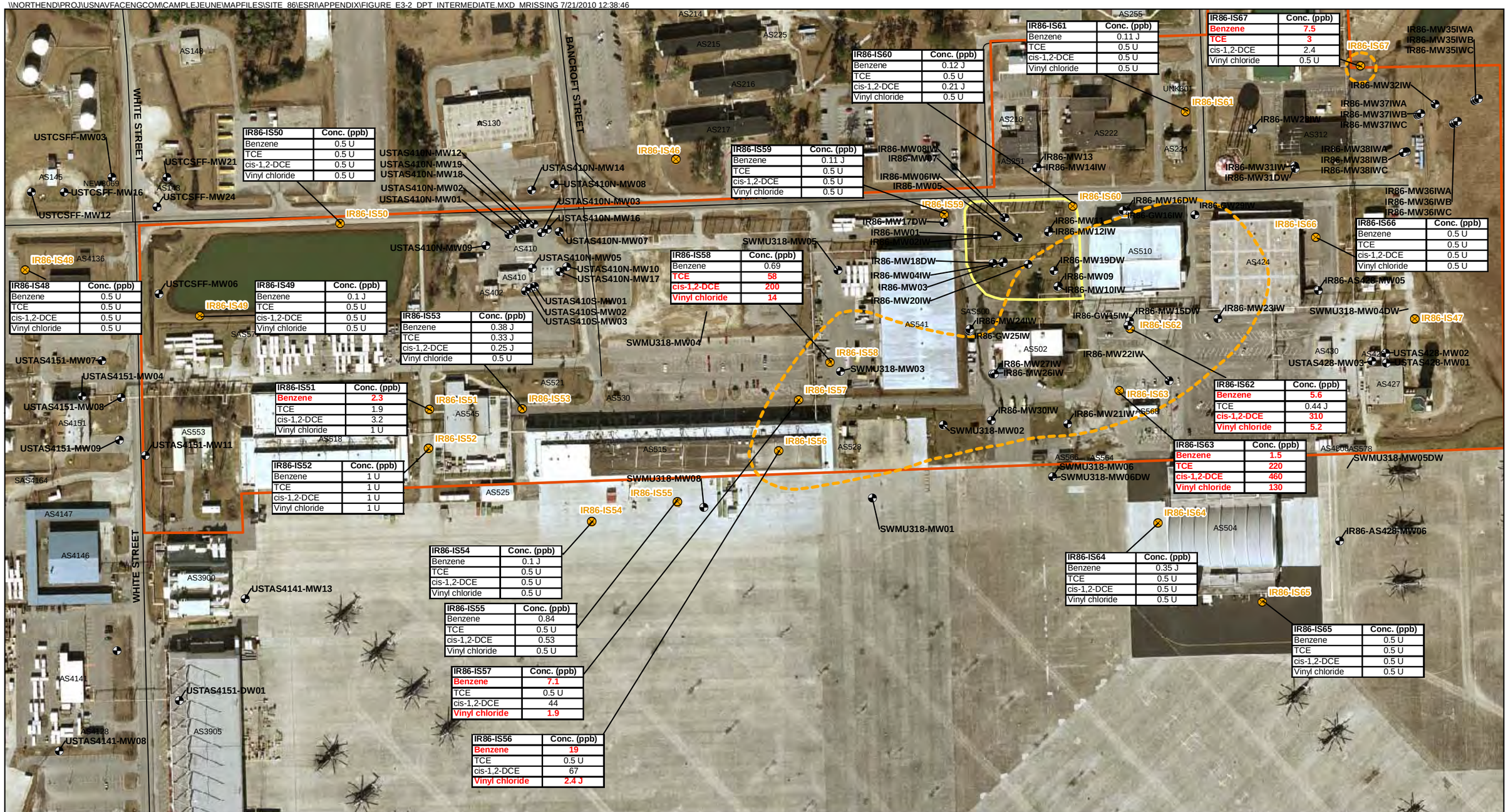
0 110 220 440 Feet

Figure E3-1
DPT Results - Shallow Interval (22-27 feet bgs)
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

\\NORTHEND\PROJ\USNAVFACENGCOM\CAMPLEJEUNE\MAPFILES\SITE_86\ESRI\APPENDIX\FIGURE_E3-2_DPT_INTERMEDIATE.MXD MRISSING 7/21/2010 12:38:46



IR86-IS50	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS48	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS49	Conc. (ppb)
Benzene	0.1 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS53	Conc. (ppb)
Benzene	0.38 J
TCE	0.33 J
cis-1,2-DCE	0.25 J
Vinyl chloride	0.5 U

IR86-IS51	Conc. (ppb)
Benzene	**2.3**
TCE	1.9
cis-1,2-DCE	3.2
Vinyl chloride	1 U

IR86-IS52	Conc. (ppb)
Benzene	1 U
TCE	1 U
cis-1,2-DCE	1 U
Vinyl chloride	1 U

IR86-IS54	Conc. (ppb)
Benzene	0.1 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS55	Conc. (ppb)
Benzene	0.84
TCE	0.5 U
cis-1,2-DCE	0.53
Vinyl chloride	0.5 U

IR86-IS57	Conc. (ppb)
Benzene	**7.1**
TCE	0.5 U
cis-1,2-DCE	44
Vinyl chloride	**1.9**

IR86-IS56	Conc. (ppb)
Benzene	**19**
TCE	0.5 U
cis-1,2-DCE	67
Vinyl chloride	**2.4 J**

IR86-IS58	Conc. (ppb)
Benzene	0.69
TCE	**58**
cis-1,2-DCE	**200**
Vinyl chloride	**14**

IR86-IS59	Conc. (ppb)
Benzene	0.11 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS60	Conc. (ppb)
Benzene	0.12 J
TCE	0.5 U
cis-1,2-DCE	0.21 J
Vinyl chloride	0.5 U

IR86-IS61	Conc. (ppb)
Benzene	0.11 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS67	Conc. (ppb)
Benzene	**7.5**
TCE	**3**
cis-1,2-DCE	2.4
Vinyl chloride	0.5 U

IR86-IS66	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS62	Conc. (ppb)
Benzene	**5.6**
TCE	0.44 J
cis-1,2-DCE	**310**
Vinyl chloride	**5.2**

IR86-IS63	Conc. (ppb)
Benzene	**1.5**
TCE	**220**
cis-1,2-DCE	**460**
Vinyl chloride	**130**

IR86-IS64	Conc. (ppb)
Benzene	0.35 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS65	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

Legend

- Monitoring Wells
- DPT Locations
- Estimate of 2L Exceedance for any Chlorinated VOC - Intermediate
- August 2006 Site 86 Boundary
- Original Site 86 Boundary

Note:
TCE - Trichloroethene
DCE - Dichloroethene
ppb - parts per billion
U - Analyte not detected
J - Estimated value
Concentrations in **red bold** text exceed the NCGWQS for the respective analyte

N

0 110 220 440 Feet

Figure E3-2
DPT Results - Intermediate Interval (47-53 feet bgs)
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

IR86-IS50	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS60	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS61	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS67	Conc. (ppb)
Benzene	0.37 J
TCE	0.5 U
cis-1,2-DCE	0.48 J
Vinyl chloride	0.5 U

IR86-IS59	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS66	Conc. (ppb)
Benzene	0.21 J
TCE	0.5 U
cis-1,2-DCE	3
Vinyl chloride	0.5 U

IR86-IS48	Conc. (ppb)
Benzene	0.11 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS49	Conc. (ppb)
Benzene	0.14 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS53	Conc. (ppb)
Benzene	0.21 J
TCE	0.17 J
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS58	Conc. (ppb)
Benzene	0.32 J
TCE	1.5
cis-1,2-DCE	16
Vinyl chloride	**1.8**

IR86-IS51	Conc. (ppb)
Benzene	1 U
TCE	1 U
cis-1,2-DCE	1 U
Vinyl chloride	1 U

IR86-IS62	Conc. (ppb)
Benzene	0.89
TCE	0.5 U
cis-1,2-DCE	57
Vinyl chloride	**0.87**

IR86-IS52	Conc. (ppb)
Benzene	1 U
TCE	1 U
cis-1,2-DCE	1 U
Vinyl chloride	1 U

IR86-IS63	Conc. (ppb)
Benzene	**1.3 J**
TCE	1 J
cis-1,2-DCE	46
Vinyl chloride	**72**

IR86-IS54	Conc. (ppb)
Benzene	0.19 J
TCE	0.18 J
cis-1,2-DCE	0.2 J
Vinyl chloride	0.5 U

IR86-IS64	Conc. (ppb)
Benzene	0.12 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS55	Conc. (ppb)
Benzene	0.26 J
TCE	0.21 J
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS65	Conc. (ppb)
Benzene	0.5 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

IR86-IS57	Conc. (ppb)
Benzene	0.24 J
TCE	0.27 J
cis-1,2-DCE	0.68
Vinyl chloride	0.5 U

IR86-IS56	Conc. (ppb)
Benzene	0.23 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
Vinyl chloride	0.5 U

Legend

- Monitoring Wells
- DPT Locations
- Estimate of 2L Exceedance for any Chlorinated VOC - Deep
- August 2006 Site 86 Boundary
- Original Site 86 Boundary

Note:
TCE - Trichloroethene
DCE - Dichloroethene
ppb - parts per billion
U - Analyte not detected
J - Estimated value
Concentrations in **red bold** text exceed the NCGWQS for the respective analyte

N

0 110 220 440 Feet

Figure E3-3
DPT Results - Intermediate Interval (55-60 feet bgs)
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: K. Howell/CLT Checked by: T. Grim/CLT

TABLE E4

Supplemental Remedial Investigation Phase II (June 2008) Groundwater Analytical Data

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Station ID	Camp Lejeune Background GW 2× Mean	NC2LGW (January, 2010)*	Adjusted Tap Water RSLs	IR86-MW09		IR86-MW28IW	IR86-MW33IW	IR86-MW34IW	IR86-MW38IWA	IR86-MW38IWB		IR86-MW38IWC	IR86-MW47	IR86-MW49DW	IR86-MW52	IR86-MW53	IR86-MW54IW	IR86-MW55IW	IR86-MW56IW
Sample ID				IR86-MW09-08B	IR86-MW09D-08B	IR86-MW28IW-08B	IR86-MW33IW-08B	IR86-MW34IW-08B	IR86-MW38IWA-08B	IR86-MW38IWB-08B	IR86-MW38IWBD-08B	IR86-MW38IWC-08B	IR86-MW47-08B	IR86-MW49DW-08B	IR86-MW52-08B	IR86-MW53-08B	IR86-MW54IW-08B	IR86-MW55IW-08B	IR86-MW56IW-08B
Sample Date				06/12/08	06/12/08	06/12/08	06/13/08	06/13/08	06/10/08	06/10/08	06/10/08	06/10/08	06/09/08	06/12/08	06/10/08	06/09/08	06/11/08	06/12/08	06/10/08
Chemical Name																			
Volatile Organic Compounds (µg/L)																			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	--	200,000	5,900	0.49 J	0.4 J	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	--	6	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.1	0.15 J	0.5 U	0.2 J	0.5 U	0.5 U	0.25 J	0.5 U	0.2 J	0.12 J
1,1-Dichloroethene	--	7	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3 J	0.17 J	0.5 U	0.5 U	2.1	0.5 U	0.5 U	4.7	16	1.4
Acetone	--	6,000	2,200	5 U	5 U	5 U	5 U	5 U	5.7 U	25 U	11 UJ	7 U	5 U	5 U	5 U	14 U	5 U	5 U	5 U
Benzene	--	1	0.41	0.5 U	0.5 U	0.32 J	0.5 U	0.5 U	0.32 J	0.51 J	0.5 UJ	0.5 U	6.3 J	0.46 J	2.7	0.5 U	1	2.4	1.5
Carbon disulfide	--	700	100	0.15 J	0.5 U	0.5 U	0.5 U	0.5	0.5 U	2.5 U	0.52 J	0.5 U	0.2 J	0.5 U	0.5 U	0.48 J	0.39 J	0.17 J	0.5 U
Chloroethane	--	3,000	2,100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	1.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	--	3	19	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	1.8 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.16 J	0.5 U	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	0.5 U	1	4.3	0.39 J	0.85	99 J	15 J	3.6	0.43 J	35	0.5 U	0.5 U	160 J	170	11
cis-1,3-Dichloropropene	--	0.4	0.43	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	2.5 J	0.5 U	2.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	--	70	68	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.15 J	0.5 U	0.14 J	0.5 U	0.5 U	0.5 U	0.5 U
m- and p-Xylene	--	500	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U
Methyl acetate	--	--	3,700	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylcyclohexane	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	--	5	4.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	--	20	13	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene	--	500	120	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.94	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	1.1 U	0.5 U	7.9	0.61 U	0.5 U
trans-1,2-Dichloroethene	--	100	11	0.5 U	0.5 U	0.19 J	0.15 J	0.5 U	0.5 U	0.65 J	0.14 J	0.48 J	0.5 U	1	0.5 U	0.5 U	0.38 J	6.8 J	0.81
trans-1,3-Dichloropropene	--	0.4	0.43	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	0.5 U	1	1.9	2.1	1.5	48	13 J	0.64 U	5 J	0.27 J	0.5 U	0.5 U	140	1	0.68 U
Vinyl chloride	--	0.03	0.016	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.2 J	0.5 UJ	0.5 U	0.5 U	29	0.5 U	0.5 U	2.3	210	11
Total Metals (µg/L)																			
Iron	5,999	300	2,600	NA	NA	4,230	7,380	NA	74,900	2,530	NA	4,790	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	NA	59.9	160	NA	760	114	NA	419	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry																			
Alkalinity (mg/L)	--	--	--	NA	NA	294	277	NA	6.56 B	353	NA	221	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	NA	39.5	28.7	NA	18.3	31.1	NA	28	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	NA	2 U	2 U	NA	0.1 J	2 U	NA	2 U	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	NA	31.5	1,730	NA	3,040	255	NA	1,550	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	NA	1 U	1 U	NA	1.2	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA
Total organic carbon (TOC) (mg/L)	--	--	--	NA	NA	5 U	5.05	NA	10.7	3.84 B	NA	7.12	NA	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* - The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conservative.

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E5

Supplemental Remedial Investigation Phase II (October 2008) DPT Groundwater Analytical Data

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Sample ID	Volatile Organic Compounds (µg/L)							
	Benzene	Ethylbenzene	Toluene	PCE	TCE	1,1-DCE	cis-1,2-DCE	VC
IR86-IS50-GW-41-45	0.68 JD	2 UD	0.56 JD	2 UD	390 D	2.7 D	53 D	1.4 JD
IR86-IS50-GW-46-50	1.7 JD	3 JD	11 D	5 UD	680 D	9.7 D	200 D	5 UD
IR86-IS50-GW-51-55	0.15 J	0.68	0.64	0.5 U	16	1.5	45	0.46 J
IR86-IS51-GW-41-45	0.14 J	0.29 J	0.79	0.5 U	0.13 J	0.5 U	0.5 U	0.5 U
IR86-IS51-GW-46-50	0.16 J	0.35 J	0.47 J	2.5	0.23 J	0.5 U	0.5 U	0.5 U
IR86-IS51-GW-51-55	0.13 J	0.25 J	0.49 J	0.81	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS51-GW-56-60	0.16 J	0.55	0.7	0.49 J	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS52-GW-41-45	4.3	0.88	2.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS52-GW-46-50	0.24 J	0.91	0.75	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS52-GW-51-55	0.32 J	0.73	0.72	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS52-GW-56-60	0.15 J	0.26 J	0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS53-GW-41-45	0.43 J	0.37 J	0.82	0.5 U	0.5 U	0.5 U	2.2	1.2
IR86-IS53-GW-46-50	0.31 J	0.64	0.48 J	0.5 U	0.5 U	0.5 U	3.5	1.2
IR86-IS53-GW-51-55	0.38 J	0.3 J	0.78	0.5 U	0.5 U	0.5 U	0.89	0.5 U
IR86-IS53-GW-56-60	0.33 J	0.42 J	0.66	0.5 U	0.5 U	0.5 U	0.2 J	0.5 U
IR86-IS54-GW-41-45	12 D	3.4 D	6.3 D	1 UD	66 D	2.8 D	110 D	1.4 D
IR86-IS54-GW-46-50	0.26 J	0.48 J	0.61	0.5 U	5.9	1.2	53	0.6
IR86-IS55-GW-46-50	0.18 J	1.0	0.75	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS55-GW-41-45	0.13 J	0.35 J	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
IR86-IS55-GW-51-55	0.48 J	0.51	0.82	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

µg/L - Micrograms per liter
D - Sample dilution required
DCE - Dichloroethene
J - Estimated value
MC - Methylene chloride
PCE - Tetrachloroethane
TCE - trichloroethene
U - Not detected above laboratroy reporting limit
VC - Vinyl chloride

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

TABLE E6

Supplemental Remedial Investigation Phase II (October 2008) Groundwater Analytical Data

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Station ID	**Camp Lejeune Background GW 2× Mean**	**NC2LGW (January 2010)***	**Adjusted Tap Water RSLs**	IR86-MW15DW	IR86-MW40IW	IR86-MW44DW		IR86-MW45DW	IR86-MW46IW	IR86-MW47IW	IR86-MW48	IR86-MW50IW
Sample ID				IR86-MW15DW-08D	IR86-MW40IW-08D	IR86-MW44DW-08D	IR86-MW44DWD-08D	IR86-MW45DW-08D	IR86-MW46IW-08D	IR86-MW47IW-08D	IR86-MW48-08D	IR86-MW50IW-08D
Sample Date				10/27/08	10/28/08	10/28/08	10/28/08	10/28/08	10/26/08	10/26/08	10/27/08	10/26/08
Chemical Name												
Volatile Organic Compounds (µg/L)												
1,1-Dichloroethane	--	6	2.4	0.5 U	0.88	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	--	7	34	0.5 U	0.72	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	--	1	0.41	0.5 U	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.5	0.5 U
cis-1,2-Dichloroethene	--	70	37	0.5 U	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.9	0.5 U
Cyclohexane	--	--	1,300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.5	0.5 U
Ethylbenzene	--	600	1.5	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylcyclohexane	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.37 J	0.5 U
o-Xylene	--	500	120	0.5 U	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	--	0.7	0.11	0.5 U	17	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	--	600	230	0.5 U	0.53	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	--	3	2	0.5 U	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.98	0.5 U
Total Metals (µg/L)												
Iron	5,999	300	2,600	NA	3,210	NA	NA	NA	NA	NA	NA	NA
Manganese	214	50	88	NA	45.1	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry												
Alkalinity (mg/L)	--	--	--	NA	251	NA	NA	NA	NA	NA	NA	NA
Carbon (mg/L)	--	--	--	NA	2	NA	NA	NA	NA	NA	NA	NA
Chloride (mg/L)	--	250	--	NA	10.2	NA	NA	NA	NA	NA	NA	NA
Ethane (µg/L)	--	--	--	NA	1	NA	NA	NA	NA	NA	NA	NA
Ethene (µg/L)	--	--	--	NA	1	NA	NA	NA	NA	NA	NA	NA
Methane (µg/L)	--	--	--	NA	330	NA	NA	NA	NA	NA	NA	NA
Nitrate (mg/L)	--	10	--	NA	0.15	NA	NA	NA	NA	NA	NA	NA
Nitrite (mg/L)	--	1	--	NA	0.25	NA	NA	NA	NA	NA	NA	NA
Sulfate (mg/L)	--	250	--	NA	2	NA	NA	NA	NA	NA	NA	NA
Sulfide (mg/L)	--	--	--	NA	2.1	NA	NA	NA	NA	NA	NA	NA

Notes:

Shading indicates exceedance of two times the mean base background concentration for Groundwater

Bold box indicates exceedance of NCGWQS or the more conservative MCL

Bold text indicates exceedance of Adjusted Tap Water RSLs

RSLs were adjusted for noncarcinogens to account for exposure to multiple constituents

* The MCL-Groundwater value is reported in place of the NC2LGW where the MCL value is more conservative.

µg/L - Micrograms per liter
B - Analyte not detected above the level reported in blanks
J - Analyte present, value may or may not be accurate or precise
mg/L - Milligrams per liter
NA - Not analyzed
R - Unreliable Result
U - The material was analyzed for, but not detected
UJ - Analyte not detected, quantitation limit may be inaccurate

Generated By: K.Ramsey/CLT
Checked By: T.Grim/CLT

Appendix F
Laboratory Reports (2006-2008)

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

February 8, 2008
SDG# 14384, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14384. The data validation was performed in accordance with the EPA CLP Statement of Work OLM04.3 method for volatiles, RSK-175 for MEE, the SW-846 Method 6010B for select metals, and the various wet chemistry methods utilized by the laboratory in the analysis of these samples. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as applicable, as well as good professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	V	RSK-175	Fe/Mn	Ions	Alk	Sulfide	Ferric Fe	Ferrous Fe	TOC
IR86-EB1-120407	1438419	water	X	X	X	X	X	X	X	X	X
IR86-EB2-120407	1438420	water	X	X	X	X	X	X	X	X	X
IR86-GW15DW-07D	1438417	water	X	X	X	X	X	X	X	X	X
IR86-GW15IW-07D	1438416	water	X	X	X	X	X	X	X	X	X
IR86-GW16DW-07D	1438411	water	X	X	X	X	X	X	X	X	X
IR86-GW16DWD-07D	1438412	water	X	X	X	X	X	X	X	X	X
IR86-GW16IW-07D	1438410	water	X	X	X	X	X	X	X	X	X
IR86-GW22IW-07D	1438430	water	X	X	X	X	X	X	X	X	X
IR86-GW29IW-07D	1438418	water	X	X	X	X	X	X	X	X	X
IR86-GW31DW-07D	1438415	water	X	X	X	X	X	X	X	X	X
IR86-GW31IW-07D	1438413	water	X	X	X	X	X	X	X	X	X
IR86-GW31WD-07D	1438414	water	X	X	X	X	X	X	X	X	X
IR86-GW43IW-07D	1438424	water	X	X	X	X	X	X	X	X	X
IR86-GW44IW-07D	1428425	water	X	X	X	X	X	X	X	X	X
IR86-GW44IWD-07D	1438426	water	X	X	X	X	X	X	X	X	X
IR86-GW48-07D	1438429	water	X	X	X	X	X	X	X	X	X
IR86-GW48IW-07D	1438428	water	X	X	X	X	X	X	X	X	X
IR86-GW49DW-07D	1438431	water	X	X	X	X	X	X	X	X	X
IR86-TB120407	1438421	water	X								
IR86-TB120507	1438422	water	X								
SWMU318-GW03-07D	1438427	water	X	X	X	X	X	X	X	X	X
SWMU318-GW05-07D	1438423	water	X	X	X	X	X	X	X	X	X
SWMU318-GW05-07D MS	157988	water	X	X	X	X	X	X	X	X	X
SWMU318-GW05-07D MSD	157989	water	X	X	X	X	X	X	X	X	X

The following quality control samples were provided with this SDG: sample IR86-TB120407 and IR86-TB120507-trip blanks; samples IR86-EB1-120407 and IR86-EB2-

120407-equipment blanks; sample IR86-GW44IWD-07D-field duplicate of sample IR86-GW44IW-07D; sample IR86-GW16DWD-07D-field duplicate of sample IR86-GW16DW-07D; and sample IR86-GW31IWD-07D-field duplicate of sample IR86-GW31IW-07D.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates
- Laboratory Control Samples *
- Matrix Spike Recoveries *
- Matrix Duplicate RPDs *
- Serial Dilution Results *
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The associated initial and continuing calibrations exhibited high %RSDs and %Ds that resulted in qualifications to the data.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

One sample exhibited slightly low surrogate recoveries that required qualifications to the data.

One of the field duplicate pairs exhibited non-comparable results that required qualifying compound results as estimated.

Two samples required dilution to obtain results within the calibration range.

RSK

Seven samples required dilution to accurately quantitate the target compound methane. The reported E flagged results were rejected in favor of the corresponding D flagged results from the dilution analyses.

Select Metals

One sample required qualification due to preparation blank contamination.

Positive results reported below the reporting limit (B flagged) were qualified as estimated J.

Wet Chemistry Parameters

The holding time was exceeded for the samples analyzed for ferrous Fe. All ferrous Fe and ferric Fe results are qualified as estimated J/UJ.

One of the field duplicate pairs exhibited high RPDs for the parameters ferrous Fe and ferric Fe. The reported positive and non-detect results for these parameters were qualified as estimated J in both the field sample and duplicate.

Positive results reported below the parameter reporting limit (B flagged) were qualified as estimated J.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the RSK-175 fraction. Form Is for this fraction indicated an incorrect extraction date. The laboratory resubmitted corrected Form Is. Copies of e-mail correspondence are included in the worksheet section of this report.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/04-05/07. Samples were received at the laboratory 12/05/07. All sample preparation and analysis was performed within CLP and/or method holding time requirements with the following exception.

Ferrous Fe

The holding time for all samples was exceeded. All reported results for ferrous Fe and ferric Fe were qualified as estimated J/UJ, with a qualifier code of HT.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %RSDs and %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
IC 12/10/07	acetone	41.1%	IR86-EB2-120407	J	ICL
CC 12/11/07	acetone	44.9%	IR86-EB1-120407, IR86-TB120407, IR86-TB120507, SWMU318-GW05-07D, IR86-GW43IW-07D, IR86-GW44IW-07D, IR86-GW44IWD-07D, SWMU318-GW03-07D, IR86-GW48IW-07D, IR86-GW22IW-07D, IR86-GW49DW-07D	J/UJ	CCL
CC 12/13/07	1,1,2-trichloro-1,2,2-trifluoroethane	29.3%	IR86-GW31IWD-07D	J/UJ	CCL

Blanks

VOA

The associated field method and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKAM	acetone	9J	10	90
VBLKAP	acetone	15	10	150
	methylene chloride	2J	10	20
VBLKXA	acetone	7J	10	70
VBLKXB	acetone	4J	10	40
IR86-TB120407	acetone	6J	10	60
	methylene chloride	7J	10	70
IR86-TB120507	acetone	3J	10	30
IR86-EB1-120407	acetone	6J	10	60
	methylene chloride	8J	10	80
IR86-EB2-120407	acetone	9J	10	90
	methylene chloride	7J	10	70
IR86-EB1-120507	methylene chloride	9J	10	90
IR86-EB2-120507	methylene chloride	8J	10	80
IR86-FB-120907	methylene chloride	140	10	1400

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-GW15IW-07D, IR86-GW48IW-07D, SWMU318-GW05-07D	acetone	CRQL	BL
IR86-GW48-07D	acetone	U	BL
IR86-GW48-07D	methylene chloride	CRQL	BL

Due to method and field blank TIC contamination, some sample TICs were rejected (R), qualifier code BL.

Select Metals

The laboratory blank exhibited contamination for which qualification was required in one sample. Please note that the laboratory reported non-detect results to the MDL rather than the RL so the results affected by blank contamination are reported as U at the reported concentration rather than U at the RL.

Blank ID	Analyte	Concentration	Action Level	Q Flag
PBLK	iron	17.608 ug/L	RL	U

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag	Q Code
IR86-GW49DW-07D	iron	U	BL

Surrogates

VOA

Sample IR86-GW29IW-07D DL exhibited slightly low surrogate recovery for bromofluorobenzene with 85% recovery (QC limit 86-115%); therefore all results were qualified as estimated (J/UJ), qualifier code: SSL.

Field Duplicates

VOA

Sample IR86-GW44IW-07D and duplicate sample IR86-GW44IWD-07D exhibited non-comparable results for vinyl chloride, cis-1,2-dichloroethene and trichloroethene at 200% RPD for all compounds; therefore, the results for these compounds were qualified as estimated (J/UJ), qualifier code: FD.

Wet Chemistry

Sample IR86-GW44IW-07D and field duplicate IR86-GW44IWD-07D exhibited non-comparable results for ferrous iron (200%) and ferric iron (114%); therefore, the results for these parameters were qualified as estimated (J/UJ), qualifier code: FD.

Identification/Quantitation

VOA

A dilution was required for samples IR86-GW48IW-07D and IR86-GW29IW-07D to obtain results within the calibration range. Therefore, E-flagged compound results were not used in the initial analysis of these samples in favor of the corresponding D-flagged compound result in the dilution.

Sample IR86-GW48IW-07D exhibited results for trichloroethene that exceeded the calibration range. The sample was analyzed at a dilution however the compound was diluted out. Therefore the result for this compound was qualified as estimated (J), qualifier code: LR.

RSK-175

Samples in this SDG required dilution to accurately quantitate the target compound methane for samples IR86-GW22IW-07D, IR86-GW29IW-07D, IR86-GW44IW-07D, IR86-GW44IWD-07D, IR86-GW48-07D, IR86-GW48IW-07D and SWMU318-GW03-07D. For these samples, the reported E flagged results are rejected, R, in favor of the corresponding D flagged results in the dilution analysis.

Select Metals

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

Wet Chemistry

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff Digitally signed by Laura Maschhoff DN: CN = Laura Maschhoff, C = US, O = DataQual Environmental Services, LLC Date: 2008.02.10 18:12:50 -06'00'

Laura Maschhoff
President

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-EB2-120407	acetone	+	J	ICL
IR86-EB1-120407, IR86-TB120407, IR86-TB120507, SWMU318-GW05-07D, IR86-GW43IW-07D, IR86-GW44IW-07D, IR86-GW44IWD-07D, SWMU318-GW03-07D, IR86-GW48IW-07D, IR86-GW22IW-07D, IR86-GW49DW-07D	acetone	+/-	J/UJ	CCL
IR86-GW31IWD-07D	1,1,2-trichloro-1,2,2-trifluoroethane	+/-	J/UJ	CCL
IR86-GW15IW-07D, IR86-GW48IW-07D, SWMU318-GW05-07D	acetone	+	CRQL	BL
IR86-GW48-07D	acetone	+	U	BL
IR86-GW48-07D	methylene chloride	+	CRQL	BL
all samples	B-flagged TICs	+	R	BL
IR86-GW29IW-07D DL	all results	+/-	J/UJ	SSL
IR86-GW44IW-07D, IR86-GW44IWD-07D	vinyl chloride, cis-1,2-dichloroethene, trichloroethene	+/-	J/UJ	FD
IR86-GW48IW-07D, IR86-GW29IW-07D	all E-flagged results	+	R	DL
IR86-GW48IW-07D DL, IR86-GW29IW-07D DL	all results except D-flagged compounds	+/-	R	DL
IR86-GW48IW-07D	trichloroethene	+	J	LR

RSK-175

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-GW22IW-07D, IR86-GW29IW-07D, IR86-GW44IW-07D, IR86-GW44IWD-07D, IR86-GW48-07D, IR86-GW48IW-07D, SWMU318-GW03-07D	methane	+E	R	DL
IR86-GW22IW-07DDL, IR86-GW29IW-07DDL, IR86-GW44IW-07DDL, IR86-GW44IWD-07DDL, IR86-GW48-07DDL, IR86-GW48IW-07DDL, SWMU318-GW03-07DDL	ethane ethene	+/-	R	DL

Select Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
IR86-GW49DW-07D	iron	+ up to action limit	U	BL
all samples	all analytes	+B	J	

Wet Chemistry

Sample ID	Parameter	Results	Q-Flag	Q Code
all samples	ferrous Fe ferric Fe	+/-	J/UJ	HT*
IR86-GW44IW-07D, IR86-GW44IWD-07D	ferrous Fe ferric Fe	+/-	J/UJ	FD*
all samples	all parameters	+B	J	

*Note – Ferrous and ferric iron results were flagged for holding time with a Q code of HT

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

February 8, 2008
SDG# 14399, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14399. The data validation was performed in accordance with the EPA CLP Statement of Work OLM04.3 method for volatiles, RSK-175 for MEE, the SW-846 Method 6010B for select metals, and the various wet chemistry methods utilized by the laboratory in the analysis of these samples. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as applicable, as well as good professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	V	RSK	Fe/Mn	Ions	Alk	Sulfide	Ferric Fe	Ferrous Fe	TOC
IR86-AS428-GW06-07D	1439924	water	X	X	X	X	X	X	X	X	X
IR86-EB1-120507	1439901	water	X	X	X	X	X	X	X	X	X
IR86-EB1-120607	1439904	water	X	X	X	X	X	X	X	X	X
IR86-EB1-120707	1439916	water	X	X	X	X	X	X	X	X	X
IR86-EB2-120507	1439902	water	X	X	X	X	X	X	X	X	X
IR86-EB2-120607	1439905	water	X	X	X	X	X	X	X	X	X
IR86-GW18DW-07D	1439908	water	X	X	X	X	X	X	X	X	X
IR86-GW20IW-07D	1439907	water	X	X	X	X	X	X	X	X	X
IR86-GW24IW-07D	1439922	water	X	X	X	X	X	X	X	X	X
IR86-GW25IW-07D	1439919	water	X	X	X	X	X	X	X	X	X
IR86-GW26IW-07D	1439920	water	X	X	X	X	X	X	X	X	X
IR86-GW27IW-07D	1439921	water	X	X	X	X	X	X	X	X	X
IR86-GW41-07D	1439917	water	X	X	X	X	X	X	X	X	X
IR86-GW42DW-07D	1439910	water	X	X	X	X	X	X	X	X	X
IR86-GW42IW-07D	1439913	water	X	X	X	X	X	X	X	X	X
IR86-GW42IWD-07D	1439914	water	X	X	X	X	X	X	X	X	X
IR86-GW47-07D	1439912	water	X	X	X	X	X	X	X	X	X
IR86-GW47IW-07D	1439906	water	X	X	X	X	X	X	X	X	X
IR86-GW47IWD-07D	1439909	water	X	X	X	X	X	X	X	X	X
IR86-GW51DW-07D	1439911	water	X	X	X	X	X	X	X	X	X
IR86-TB120707	1439923	water	X								
IR86-TB120607	1439915	water	X								
IR86-SWMU318-GW08-07D	1439918	water	X	X	X	X	X	X	X	X	X
IR86-AS428-GW06-07D MS	158436	water	X	X	X	X	X	X	X	X	X
IR86-AS428-GW06-07D MSD	158437	water	X	X	X	X	X	X	X	X	X

The following quality control samples were provided with this SDG: sample IR86-TB120607 and IR86-TB120707-trip blanks; samples IR86-EB1-120507, IR86-EB2-120507, IR86-EB1-120607, IR86-EB2-120607, IR86-EB1-120707-equipment blanks; sample IR86-GW42IWD-07D-field duplicate of sample IR86-GW42IW-07D; and sample IR86-GW47IWD-07D-field duplicate of sample IR86-GW47IW-07D.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Serial Dilution Results
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria.

VOA

The associated continuing calibrations exhibited high %Ds that resulted in qualifications to the data.

Blank contamination was noted in the method, holding and QC blanks associated with samples in this batch. Qualifications were added to the data.

Two samples exhibited slightly low surrogate recoveries that resulted in qualifications to the data.

One of the field duplicate pairs exhibited non-comparable results that resulted in the qualification of sample results.

RSK

One equipment blank exhibited a high positive result for methane. When compared with all other field QC blanks submitted in this sampling event, the result for this blank appears to be an outlier. For this reason the equipment blank was not used to qualify results as non-detect. However, the reported positive results for methane in associated samples were qualified as estimated J as a precaution and should be considered potentially biased high.

Four samples required dilution to accurately quantitate the target compound methane. The reported E flagged results were rejected in favor of the corresponding D flagged results from the dilution analyses.

The MS/MSD pair exhibited negative recovery for the target compound methane. It is possible that this is due to matrix effects in the sample. Therefore, methane was qualified as estimated J in the native sample and should be considered biased low.

The submitted field duplicate pairs in this SDG exhibited considerable variability in the reported positive results (>100% difference). The reported positive results in both field duplicate pairs were qualified as estimated J.

Select Metals

The associated serial dilution sample exhibited non-compliant %Ds for both manganese and iron. These analytes were qualified as estimated J/UJ in all field samples.

Positive results reported below the reporting limit (B flagged) were qualified as estimated J.

Wet Chemistry Parameters

The holding time was exceeded for the samples analyzed for ferrous Fe. All ferrous Fe and ferric Fe results are qualified as estimated J/UJ.

The MS/MSD analysis for the alkalinity fraction exhibited recoveries below the QC limit. All alkalinity results in field samples were qualified as estimated J/UJ.

One of the field duplicate pairs exhibited high RPDs for the parameters sulfate, chloride, alkalinity and ferrous Fe. The reported positive results for these parameters were qualified as estimated J in both the field sample and duplicate.

Positive results reported below the parameter reporting limit (B flagged) were qualified as estimated J.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the RSK-175 fraction. Form Is for this fraction indicated an incorrect extraction date. The laboratory resubmitted corrected Form Is. Copies of e-mail correspondence are included in the worksheet section of this report. All documentation of the discussion regarding an anomalous rinse blank result is included in the worksheets section of this report. The data package for the Wet Chemistry parameters was not present in the initial shipment of the data. The package was requested and received from the laboratory.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/05-09/07. Samples were received at the laboratory 12/05-10/07. All sample preparation and analysis was performed within CLP and/or method holding time requirements with the following exception.

Ferrous Fe

The holding time for all samples was exceeded. All reported results for ferrous Fe and ferric Fe were qualified as estimated J/UJ, with a qualifier code of HT.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
CC 12/13/07	1,1,2-trichloro-1,2,2-trifluoroethane	29.3%	IR86-EB1-120707, SWMU318-GW08-07D, IR86-GW25IW-07D, IR86-GW26IW-07D, IR86-GW27IW-07D, IR86-AS428-GW06-07D, IR86-EB1-120507, IR86-EB2-120507, IR86-EB2-120607, IR86-GW20IW-07D	J/UJ	CCL
CC 12/12/07	acetone	25.2%	IR86-GW41-07D, IR86-GW24IW-07D, IR86-TB-120707	J/UJ	CCL

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
CC 12/14/07	acetone 2-butanone 4-methyl-2-pentanone 2-hexanone	53.1% 31.5% 40.1% 46.0%	IR86-EB1-120607, IR86-GW47IW-07D, IR86-GW18DW-07D, IR86-GW47IWD-07D, IR86-GW42DW-07D, IR86-GW51DW-07D, IR86-GW47-07D#, IR86-GW42IW-07D, IR86-GW42IWD-07D*, IR86-TB120607	J/UJ	CCL

**Please note that non-detected results for this sample were qualified due to non-compliant surrogate results.*
 # Please note that results for this sample were qualified due to non-compliant surrogate results.

Blanks

VOA

The associated field method, holding and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKZQ	acetone	10	10	100
	methylene chloride	3J	10	30
VHBLKXI	acetone	3J	10	30
IR86-TB-120507	acetone	3J	10	30
IR86-TB-120707	acetone	14	10	140
	methylene chloride	3J	10	30
IR86-EB1-120507	methylene chloride	9J	10	90
IR86-EB1-120607	acetone	5J	10	50
	methylene chloride	6J	10	60
IR86-EB1-120707	acetone	18	10	180
	methylene chloride	7J	10	70
IR86-EB2-120607	acetone	9J	10	90
	methylene chloride	8J	10	80
IR86-FB-120907	methylene chloride	140	10	1400

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW24IW-07D, IR86-GW41-07D	acetone	U	BL
IR86-GW24IW-07D, IR86-GW41-07D	methylene chloride	CRQL	BL

RSK-175

Rinse blank IR86-EB1-120907 showed an unexpectedly high concentration of methane (34 ug/L). This is an anomaly that is not shared with any of the other field QC blanks taken in this sampling event. All other rinse and field blanks submitted in this sampling

event exhibited concentrations for methane of 0.3 ug/L up to 0.5 ug/L. Therefore, this rinse blank was not used to qualify the samples as non-detect It is unclear how the equipment blank became contaminated to this degree, however, reported results in associated samples are qualified as estimated J as a precaution. These results should be considered potentially biased high. Compounds for which there was no action required are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
IR86-EB1-120907	methane	34 ug/L	1 ug/L	NA

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-AS428-GW06-07D	methane	J	BL*

Note: Methane in this sample was flagged as J, MSL due to negative MS/MSD recoveries. The MSL qual code was used to indicate potential for low bias due to the evidence of matrix interference with recovery of methane.

Surrogates

VOA

Samples IR86-GW47-07D and IR86-GW42IWD-07D* exhibited slightly low recoveries for bromofluorobenzene at 85% and 85 % (QC limits 86-115); therefore, the results for these samples were qualified as estimated (J/UJ), qualifier code: SSL. (Both samples were re-analyzed with similar results exhibited, the initial analysis was used.)

**Please note positive results for this sample were qualified due to non-comparable field duplicate results.*

Matrix Spike Recoveries

RSK-175

The matrix spike analyses of the sample IR86-AS428-GW06-07D for RSK-175 exhibited non-compliant %Rs (<58% or >120%) for methane. Specific action is noted in the following table.

MS	Compound	Samples Affected	%R	Q Flag	Q Code
IR86-AS428-GW06-07D	methane	IR86-AS428-GW06-07D	-267/-233	J	MSL

Wet Chemistry

The matrix spike analyses of the sample IR86-AS428-GW06-07D for alkalinity exhibited a non-compliant %R (<75% or >125%). Specific action is noted in the following table.

MS	Parameter	Samples Affected	%R	Q Flag	Q Code
IR86-AS428-GW06-07D	alkalinity	all field samples	-0.392/8.7	J/R	MSL

Serial Dilution Results

Select Metals

The serial dilution analysis of the sample IR86-AS428-GW06-07D exhibited non-compliant %Ds (>10%) for two analytes. Specific action is noted in the following table.

SD	Analyte	Samples Affected	%D	Q Flag	Q Code
IR86-AS428-GW06-07D	iron manganese	all field samples	12.9 15.6	J/UJ	SD

Field Duplicate

VOA

Sample IR86-GW42IW-07D and duplicate sample IR86-GW42IWD-07D did not exhibit comparable results with trichloroethene at 177% RPD and cis-1,2-dichloroethene at 200% RPD. Therefore the results for these compounds were qualified as estimated (J/UJ) in both samples, qualifier code: FD.

RSK-175

The field duplicate pairs of samples IR86-GW42IW-07D and IR86-GW47IW-07D exhibited considerable variability in the reported results for methane, 170% RPD and 157% RPD, respectively. The results for this compound in both field duplicate pairs were qualified as estimated J, qualifier code FD.

Wet Chemistry

Sample IR86-GW42IW-07D and duplicate sample IR86-GW42IWD-07D did not exhibit comparable results for sulfate (165% RPD), chloride (104% RPD), alkalinity (90% RPD) and ferrous Fe (82% RPD). Therefore the results for these parameters were qualified as estimated (J) in both samples, qualifier code: FD.

Identification/Quantitation

VOA

Samples IR86-GW47-07DRE and IR86-GW42IWD-07DRE were not used, due to non-compliant surrogate recoveries, in favor of the initial analysis, qualifier code: RE.

RSK-175

Dilutions were required for samples IR86-GW24IW-07D, IR86-GW25IW-07D, IR86-GW26IW-07D and IR86-GW27IW-07D to obtain results within the calibration range for methane; therefore, E-flagged compound results were rejected in the initial analysis in favor of the corresponding D-flagged compound results in the dilutions.

Select Metals

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

Wet Chemistry

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-EB1-120707, SWMU318-GW08-07D, IR86-GW25IW-07D, IR86-GW26IW-07D, IR86-GW27IW-07D, IR86-AS428-GW06-07D, IR86-EB1-120507, IR86-EB2-120507, IR86-EB2-120607, IR86-GW20IW-07D	1,1,2-trichloro-1,2,2-trifluoroethane	+/-	J/UJ	CCL
IR86-GW41-07D, IR86-GW24IW-07D, IR86-TB-120707	acetone	+/-	J/UJ	CCL
IR86-EB1-120607, IR86-GW47IW-07D, IR86-GW18DW-07D, IR86-GW47IWD-07D, IR86-GW42DW-07D, IR86-GW51DW-07D, IR86-GW47-07D#, IR86-GW42IW-07D, IR86-GW42IWD-07D*, IR86-TB120607	acetone 2-butanone 4-methyl-2-pentanone 2-hexanone	+/-	J/UJ	CCL
IR86-GW24IW-07D, IR86-GW41-07D	acetone	+	U	BL
IR86-GW24IW-07D, IR86-GW41-07D	methylene chloride	+	CRQL	BL
IR86-GW47-07D, IR86-GW42IWD-07D*	all results	+/-	J/UJ	SSL
IR86-GW42IW-07D, IR86-GW42IWD-07	trichloroethene cis-1,2-dichloroethene	+/-	J/UJ	FD
IR86-GW47-07DRE, IR86-GW42IWD-07DRE	all results	+/-	R	RE

**Please note positive results for this sample were qualified due to non-comparable field duplicate results and non-detected compound results qualified due to non-compliant surrogates results.*
 # Please note that results for this sample were qualified due to non-compliant surrogate results.

RSK-175

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-AS428-GW06-07D	methane	+	J	BL*
IR86-AS428-GW06-07D	methane	+	J	MSL
IR86-GW42IW-07D, IR86-GW42IWD-07D, IR86-GW47IW-07D, IR86-GW47IWD-07D	methane	+	J	FD
IR86-GW24IW-07D, IR86-GW25IW-07D, IR86-GW26IW-07D, IR86-GW27IW-07D	all E flagged	+E	R	DL
IR86-GW24IW-07DDL, IR86-GW25IW-07DDL, IR86-GW26IW-07DDL, IR86-GW27IW-07DDL	all except corresponding D flagged results	+/-	R	DL

**Note: Methane in this sample was flagged as J, MSL due to negative MS/MSD recoveries. The MSL qual code was used to indicate potential for low bias due to the evidence of matrix interference with recovery of methane.*

Select Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
all field samples	iron	+/-	J/UJ	SD
	manganese			
all samples	all analytes	+B	J	

Summary of Data Qualifications

Wet Chemistry

Sample ID	Parameter	Results	Q-Flag	Q Code
all samples	ferrous Fe ferric Fe	+/-	J/UJ	HT
all samples	alkalinity	+/-	J/UJ	MSL
IR86-GW42IW-07D, IR86-GW42IWD-07D	sulfate chloride alkalinity ferrous FE	+	J	FD*
all samples	all parameters	+B	J	

* Please note that the parameter alkalinity was flagged for low MS/MSD recoveries with Q code of MSL and ferrous Fe was flagged estimated for holding time violations with a Q code of HT.

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

CompuChem
a division of Liberty Analytical Corp.

CompuChem a Division of Liberty Analytical Corp.
Remit to: P.O. Box 4603
Cary, NC 27519-4603
Phone: (919) 379-4100
Fax: (919) 379-4050

ANALYTICAL RESULTS

Project: 14399
Project ID: CTO-200 MCAS SITE86/362251.FI.
Solid results are reported on a dry weight basis.

Lab ID: 1439924 Date Collected: 12/9/2007 10:10 Matrix: Water
Sample ID: AS428-GW06 Date Received: 12/10/2007 16:15

Parameters	Results	Units	Report Limit	DF	Prepared	By	Analyzed	By	CAS No.	Qual	RegLmt
300.0 IC WATER OPTION 1			Analytical Method: EPA 300.0								
Nitrite	0.0500U	mg/L	0.0500	5			12/11/2007	2497	NO2		
Nitrate	0.0500U	mg/L	0.0500	5			12/11/2007	2497	NO3		
Sulfate	2.45	mg/L J	5.00	5			12/11/2007	2497	SO4		
Chloride	12.0	mg/L	2.00	5			12/11/2007	2497	Cl		
ALKALINITY 310.2 WATER			Analytical Method: EPA 310.2 ALKALINITY								
Alkalinity	284	mg/L J MSL	10.0	1			12/19/2007	2477			
FERROUS IRON 3500-FE D WATER			Analytical Method: 3500-FE B/D FERROUS								
Ferrous Iron	8.73	mg/L J HT	0.400	5			12/21/2007	2152			
FERRIC IRON 3500-FE D WATER			Analytical Method: 3500-FE B/D FERRIC								
Ferric Iron	0.400U	mg/L UJ, HT	0.400	1			12/21/2007	2152			
SULFIDE 376.1 WATER			Analytical Method: EPA 376.1/SM4500S-2-F								
Sulfide	1.00U	mg/L	1.00	1			12/12/2007	2477			
TTL ORGNC CRBN (TOC) 9060 W			Analytical Method: SM5310B/9060/LLOYD KAHN								
TOC	5.00U	mg/L	5.00	1			12/22/2007	2152			

LMK 021308

JMC 2508

REPORT OF LABORATORY ANALYSIS
This report shall not be reproduced, except in full,
without the written consent of CompuChem a Division of Liberty Analytical Corp..

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

February 8, 2008
SDG# 14425, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14425. The data validation was performed in accordance with the EPA CLP Statements of Work, Document OLM04.3 method for volatiles, semivolatiles, and pesticides/PCBs, and ILM05.4 for metals and cyanide. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as well as good professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	V	SV	P/PCB	METALS/CN
IR86-SS01-07D	1442502	soil	X	X	X	X
IR86-SS02-07D	1442503	soil	X	X	X	X
IR86-SS03-07D	1442501	soil	X	X	X	X
IR86-SS04-07D	1442504	soil	X	X	X	X
IR86-SS05-07D	1442505	soil	X	X	X	X
IR86-SS05D-07D	1442506	soil	X	X	X	X
IR86-SS06-07D	1442507	soil	X	X	X	X
IR86-SS07-07D	1442508	soil	X	X	X	X
IR86-SS08-07D	1442509	soil	X	X	X	X
IR86-SS09-07D	1442510	soil	X	X	X	X
IR86-SS10-07D	1442511	soil	X	X	X	X
IR86-SS03-07D MS	158342	soil	X	X	X	X
IR86-SS03-07D MSD	158343	soil	X	X	X	X

The following quality control samples were provided with this SDG: sample IR86-SS05D-07D field duplicate of sample IR86-SS05-07D.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations

- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs
- Serial Dilution Results
- Field Duplicates *
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

One of the associated continuing calibrations exhibited high %Ds that resulted in qualifications to the data.

Blank contamination was noted in the method, holding and QC blanks associated with samples in this batch. Qualifications were added to the data.

SVOA

The associated continuing calibrations exhibited high %Ds that resulted in qualifications to the data.

Pesticides/PCBs

One sample exhibited non-compliant surrogate recoveries. Reported results in the sample were qualified as estimated J/UJ.

Some results exhibited column quantitation %Ds greater than 25%. These results were qualified as estimated J.

Metals/Cyanide

Blank contamination was noted in the associated laboratory blanks. The analytical data required qualifications.

The associated matrix spike sample exhibited non-compliant %Rs for antimony, mercury, lead, and cyanide. The analytes antimony and mercury were recovered below the QC limit and were qualified as estimated J/UJ in all field samples. The analytes lead and cyanide were recovered above the QC limit and positive results were qualified as estimated J in all field samples.

The associated matrix duplicate sample exhibited non-compliant %Ds for iron and manganese. These analytes were qualified as estimated J/UJ in all field samples.

The associated serial dilution sample exhibited non-compliant %Ds for copper and potassium. These analytes were qualified as estimated J/UJ in all field samples.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/07/07. Samples were received at the laboratory 12/07/07. All sample preparation and analysis was performed within CLP and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Qual Code
CC 12/13/07	acetone	37.1%	IR86-SS09-07D, IR86-SS10-07D, IR86-SS06-07D, IR86-SS07-07D	J/UJ	CCL
	2-butanone	29.7%			

SVOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	QCode
CC 01/04/08	hexachlorobutadiene	39.9%	IR86-SS03-07D, IR86-SS01-07D, IR86-SS02-07D, IR86-SS04-07D, IR86-SS05-07D, IR86-SS05D-07D, IR86-SS06-07D, IR86-SS07-07D, IR86-SS08-07D, IR86-SS09-07D	J/UJ	CCL
CC 01/05/08	hexachlorobutadiene 2,4-dinitrophenol 4-nitroaniline carbazole	41.2% 27.5% 26.9% 32.1%	IR86-SS10-07D	J/UJ	CCL

Blanks

VOA

The associated field method, holding and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKZX	acetone	5J	10	50
VHBLKZH	acetone	4J	10	40
IR86-TB-120707	acetone	14	10	140
IR86-EB2-120707	acetone	13	10	130

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-SS02-07D, IR86-SS03-07D, IR86-SS04-07D, IR86-SS05-07D, IR86-SS06-07D, IR86-SS09-07D	acetone	CRQL	BL
IR86-SS07-07D, IR86-SS08-07D	acetone	U	BL

Metals/Cyanide

Preparation and lab blank contamination was noted. Qualification for several analytes was required. Contamination and sample results qualifications are indicated in the following tables.

Blank ID	Analyte	Concentration	Action Level
PBLK	antimony	0.260J mg/Kg	CRDL
	sodium	19.698J mg/Kg	CRDL
CCB	beryllium	0.0448J mg/Kg	CRDL
	silver	0.0394J mg/Kg	CRDL

Sample ID	Analyte	Action Level	Q Flag	Q Code
all samples	antimony	+ up to CRDL	U at CRDL	BL
all samples except IR86-SS07-07D	sodium			
all samples except IR86-SS08-07D	beryllium			
IR86-SS06-07D	silver			

Surrogate Recoveries

Pesticides/PCBs

One sample IR86-SS10-07D exhibited non-compliant recoveries for both TCX (19%/21%) and DCB (18%/19%) on both columns. Reported positive and non-detect results in the sample are qualified as estimated J/UJ with a qualifier code of SSL.

Matrix Spike Recoveries

Metals/Cyanide

The matrix spike analysis of the sample IR86-SS03-07D exhibited non-compliant %Rs (<75% or >125%) for the analytes antimony, mercury, lead and cyanide. Specific action is noted in the following table.

MS ID	Analytes	Samples Affected	%R	Q Flag	Q Code
IR86-SS03-07D	antimony	all samples	38%	J/UJ	MSL
	mercury		74%		
	lead		183%	J	MSH
	cyanide		150%		

Matrix Duplicate Results

Metals/Cyanide

The matrix duplicate analysis of the sample IR86-SS03-07D exhibited non-compliant %Ds (>10%) for the analytes iron and manganese. Specific action is noted in the following table.

MS ID	Analytes	Samples Affected	%D	Q Flag	Q Code
IR86-SS03-07D	iron	all samples	24%	J/UJ	MDP
	manganese		21%		

Serial Dilution Results

Metals/Cyanide

The serial dilution analysis of the sample IR86-SS03-07D exhibited non-compliant %Ds (>10%) for the analytes copper and potassium. Specific action is noted in the following table.

SD ID	Analytes	Samples Affected	%D	Q Flag	Q Code
IR86-SS03-07D	copper	all samples	13%	J/UJ	SD
	potassium		20%		

Identification/Quantitation

Pesticides/PCBs

Several samples exhibited positive results with column quantitation %Ds greater than 25%. These P flagged results were qualified as estimated J with a qualification code of 2C.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-SS09-07D, IR86-SS10-07D, IR86-SS06-07D, IR86-SS07-07D	acetone, 2-butanone	+/-	J/UJ	CCL
IR86-SS02-07D, IR86-SS03-07D, IR86-SS04-07D, IR86-SS05-07D, IR86-SS06-07D, IR86-SS09-07D	acetone	+	CRQL	BL
IR86-SS07-07D, IR86-SS08-07D	acetone	+	U	BL

SVOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-SS03-07D, IR86-SS01-07D, IR86-SS02-07D, IR86-SS04-07D, IR86-SS05-07D, IR86-SS05D-07D, IR86-SS06-07D, IR86-SS07-07D, IR86-SS08-07D, IR86-SS09-07D	hexachlorobutadiene	+/-	J/UJ	CCL
IR86-SS10-07D	hexachlorobutadiene 2,4-dinitrophenol 4-nitroaniline carbazole	+/-	J/UJ	CCL

Pesticides/PCBs

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-SS10-07D	all compounds	+/-	J/UJ	SSL
all samples	all results	+P	J	2C

Metals/Cyanide

Sample ID	Analyte	Results	Q-Flag	Q Code
all samples	antimony	+ up to CRDL	U at CRDL	BL
all samples except IR86-SS07-07D	sodium			
all samples except IR86-SS08-07D	beryllium			
IR86-SS06-07D	silver			
all samples	antimony mercury	+/-	J/UJ	MSL
all samples	lead cyanide	+	J	MSH
all samples	iron manganese	+/-	J/UJ	MDP
all samples	copper potassium	+/-	J/UJ	SD

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

February 8, 2008
SDG# 14426, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14426. The data validation was performed in accordance with the EPA CLP Statements of Work, Document OLM04.3 method for volatiles, semivolatiles, and pesticides/PCBs, and ILM05.4 for metals and cyanide. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as well as good professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	V	SV	P/PCB	Metals/CN
IR86-EB2-120707	1442604	water	X	X	X	X
IR86-SW01-07D	1442601	water	X	X	X	X
IR86-SW02-07D	1442602	water	X	X	X	X
IR86-SW03-07D	1442603	water	X	X	X	X

The following quality control samples were provided with this SDG: sample IR86-EB2-120707-equipment blank.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates *
- Laboratory Control Samples *
- Matrix Spike Recoveries NA
- Matrix Duplicate RPDs NA

- Serial Dilution Results *
- Field Duplicates NA
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The associated continuing calibrations exhibited high %Ds that resulted in qualifications to the data.

Blank contamination was noted in the method, holding and QC blanks associated with samples in this batch. Qualifications were added to the data.

SVOA

The associated continuing calibrations exhibited high %Ds that resulted in qualifications to the data.

Pesticides/PCBs

One result exhibited column quantitation %Ds greater than 25%. These results were qualified as estimated J.

Metals/Cyanide

Blank contamination was noted in the associated laboratory blanks. The analytical data required qualifications.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/07/07. Samples were received at the laboratory 12/07/07. All sample preparation and analysis was performed within CLP and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
CC 12/13/07	acetone	32.3%	IR86-SW01-07D	J/UJ	CCL
CC 12/13/07	1,1,2-trichloro-1,2,2-trifluoroethane	29.3%	IR86-SW02-07D, IR86-SW03-07D, IR86-EB2-120707	J/UJ	CCL

SVOA

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
CC 12/14/08	hexachlorobutadiene hexachlorocyclopentadiene	35.9% 32.8%	all samples	J/UJ	CCL

Blanks

VOA

The associated field method, holding and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKZR	acetone	15	10	150
VHBLKXH	acetone	2J	10	20
IR86-TB-120707	acetone	14	10	140
	methylene chloride	3J	10	30
IR86-FB-120907	methylene chloride	140	10	1400

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-SW02-07D, IR86-SW03-07D	acetone	CRQL	BL
IR86-SW01-07D	acetone	U	BL
IR86-SW01-07D	methylene chloride	CRQL	BL

Metals/Cyanide

Preparation and lab blank contamination was noted. Qualification for several analytes was required. Contamination and sample results qualifications are indicated in the following tables.

Blank ID	Analyte	Concentration	Action Level
PBLK	zinc	7.975J ug/L	CRDL
ICB	antimony	2.446J ug/L	CRDL
	chromium	0.701J ug/L	CRDL
CCB	copper	0.746J ug/L	CRDL

Sample ID	Analyte	Action Level	Q Flag	Q Code
all samples	zinc	+ up to CRDL	U at CRDL	BL
IR86-SW01-07D, IR86-SW02-07D	antimony			
IR86-SW01-07D	chromium			
all samples	copper			

Identification/Quantitation

Pesticides/PCBs

One sample exhibited a positive result with a column quantitation %D greater than 25%. This P flagged result was qualified as estimated J with a qualification code of 2C.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-SW01-07D	acetone	+/-	J/UJ	CCL
IR86-SW02-07D, IR86-SW03-07D, IR86-EB2-120707	1,1,2-trichloro-1,2,2-trifluoroethane	+/-	J/UJ	CCL
IR86-SW02-07D, IR86-SW03-07D	acetone	+	CRQL	BL
IR86-SW01-07D	acetone	+	U	BL
IR86-SW01-07D	methylene chloride	+	CRQL	BL

SVOA

Sample ID	Compound	Results	Q-Flag	Q Code
all samples	hexachlorobutadiene hexachlorocyclopentadiene	+/-	J/UJ	CCL

Pesticides/PCBs

Sample ID	Compound	Results	Q-Flag	Q Code
all samples	all results	+P	J	2C

Metals/Cyanide

Sample ID	Analyte	Results	Q-Flag	Q Code
all samples	zinc	+ up to CRDL	U at CRDL	BL
IR86-SW01-07D, IR86-SW02-07D	antimony			
IR86-SW01-07D	chromium			
all samples	copper			

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

February 8, 2008
SDG# 14430, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14430. The data validation was performed in accordance with the EPA CLP Statement of Work OLM04.3 method for volatiles, RSK-175 for MEE, the SW-846 Method 6010B for select metals, and the various wet chemistry methods utilized by the laboratory in the analysis of these samples. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as applicable, as well as good professional judgment.

Sample ID	Lab ID	Matrix	V	RSK	Fe/Mn	Ions	Alk	Sulfide	Ferric Fe	Ferrous Fe	TOC
IR86-EB1-120807	1443018	water	X	X	X	X	X	X	X	X	X
IR86-EB1-120907	1443008	water	X	X	X	X	X	X	X	X	X
IR86-FB-120907	1443009	water	X	X	X	X	X	X	X	X	X
IR86-GW17DW-07D	1443005	water	X	X	X	X	X	X	X	X	X
IR86-GW19DW-07D	1443014	water	X	X	X	X	X	X	X	X	X
IR86-GW23IW-07D	1443001	water	X	X	X	X	X	X	X	X	X
IR86-GW30IW-07D	1443002	water	X	X	X	X	X	X	X	X	X
IR86-GW34IW-07D	1443006	water	X	X	X	X	X	X	X	X	X
IR86-GW39-07D	1443010	water	X	X	X	X	X	X	X	X	X
IR86-GW40-07D	1443016	water	X	X	X	X	X	X	X	X	X
IR86-GW44DW-07D	1443011	water	X	X	X	X	X	X	X	X	X
IR86-GW45DW-07D	1443007	water	X	X	X	X	X	X	X	X	X
IR86-GW46IW-07D	1443013	water	X	X	X	X	X	X	X	X	X
IR86-GW50IW-07D	1443017	water	X	X	X	X	X	X	X	X	X
IR86-TB-120807	1443019	water	X								
IR86-TB-120907	1443020	water	X								
SWMU318-GW01-07D	1443012	water	X	X	X	X	X	X	X	X	X
SWMU318-GW06-07D	1443015	water	X	X	X	X	X	X	X	X	X
USTCSFF-GW06-07D	1443003	water	X	X	X	X	X	X	X	X	X
USTCSFF-GW06D--07D	1443004	water	X	X	X	X	X	X	X	X	X
IR86-GW23IW-07D MS	158431	water	X	X	X	X	X	X		X	X
IR86-GW23IW-07D MSD	158432	water	X	X	X	X	X	X		X	X

The following quality control samples were provided with this SDG: samples IR86-TB-120807 and IR86-TB-120907-trip blanks, sample IR87-FB-120907-field blank; samples IR86-EB-

120807 and IR86-EB-120907-equipment blanks; and sample USTCSFF-GW06D-07D-field duplicate of sample USTCSFF-GW06-07D.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations *
- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates *
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Field Duplicates *
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

Blank contamination was noted in the method, holding and QC blanks associated with samples in this batch. Qualifications were added to the data.

RSK

One equipment blank exhibited a high positive result for methane. When compared with all other field QC blanks submitted in this sampling event, the result for this blank appears to be an outlier. For this reason the equipment blank was not used to qualify results as non-detect.

However, the reported positive results for methane in associated samples were qualified as estimated J as a precaution and should be considered potentially biased high.

Two samples required dilution to accurately quantitate the target compound methane. The reported E flagged results were rejected in favor of the corresponding D flagged results from the dilution analyses.

The MS exhibited negative recovery and the MSD exhibited low recovery for the target compound methane. It is possible that this is due to matrix effects in the sample. Therefore, methane was qualified as estimated J in the native sample and should be considered biased low.

Select Metals

Blank contamination was noted in the method and field QC blanks associated with samples in this batch. Qualifications were added to the data.

Positive results reported below the reporting limit (B flagged) were qualified as estimated J.

Wet Chemistry Parameters

The holding time was exceeded for the samples analyzed for ferrous Fe. All ferrous Fe and ferric Fe results are qualified as estimated J/UJ. Several samples for ferrous Fe were received with a pH above 2. Results in these samples for ferrous Fe and ferric Fe were qualified as estimated J/UJ.

Blank contamination was noted in the method and field QC blanks associated with samples in this batch. Qualifications were added to the data in the alkalinity, chloride and ferrous Fe fractions.

The MS/MSD analysis for the alkalinity fraction exhibited recoveries below the QC limit. All alkalinity results in field samples were qualified as estimated J/UJ.

Positive results reported below the parameter reporting limit (B flagged) were qualified as estimated J.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the RSK-175 fraction. Form Is for this fraction indicated an incorrect extraction date. The laboratory resubmitted corrected Form Is. Copies of e-mail correspondence are included in the worksheet section of this report. All documentation of the discussion regarding an anomalous rinse blank result is included in the worksheets section of this report.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/08-09/07. Samples were received at the laboratory 12/10/07. All sample preparation and analysis was performed within CLP and/or method holding time requirements with the following exception.

Ferrous Fe

The holding time for all samples was exceeded. All reported results for ferrous Fe and ferric Fe were qualified as estimated J/UJ, with a qualifier code of HT.

Several samples were submitted for ferrous Fe analysis with pH values >2. The reported results for ferrous Fe in samples SWMU318-GW01-07D, IR86-GW46IW-07D, IR86-GW50IW-07D, IR86-GW17DW-07D, IR86-AS428-GW06-07D and IR86-GW34IW-07D were qualified as estimated J/UJ with a qualifier code of OT.

Blanks

VOA

The associated field, method, holding and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKAA	acetone	4J	10	40
VHBLKXH	acetone	2J	10	20
IR86-EB1-120807	acetone	10	10	100
IR86-EB1-120907	acetone	3J	10	30

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-GW50IW-07D, USTCSFF-GW06-07D	acetone	CRQL	BL

RSK-175

Rinse blank IR86-EB1-120907 showed an unexpectedly high concentration of methane (34 ug/L). This is an anomaly that is not shared with any of the other field QC blanks taken in this sampling event. All other rinse and field blanks submitted in this sampling event exhibited concentrations for methane of 0.3 ug/L up to 0.5 ug/L. Therefore, this rinse blank was not used to qualify the samples as non-detect It is unclear how the equipment blank became contaminated to this degree, however, reported results in associated samples are qualified as estimated J as a precaution. These results should be considered potentially biased high. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
IR86-EB1-120907	methane	34 ug/L	1 ug/L	NA

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Q Code
IR86-GW17DW-07D, IR86-GW23IW-07D, IR86-GW30IW-07D, IR86-GW34IW-07D, IR86-GW45DW-07D, USTCSFF-GW06-07D, USTCSFF-GW06D-07D	methane	J	BL

Select Metals

The associated field and method blanks exhibited contamination as noted in the following table. Analytes for which there was no action required, are not included in the following table. Generally, affected results are flagged as non-detect at the analyte reporting limit. However, in this situation the laboratory is reporting non-detect results to the MDL rather than the RL so the results affected by blank contamination are reported as U at the reported concentration rather than U at the reporting level.

Blank ID	Analyte	Concentration	Action Level	Q Flag
PBLK	iron	13.8 ug/L	RL (100 ug/L)	U
IR86-EB1-120807	manganese	0.15J ug/L	RL (10 ug/L)	

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag	Q Code
IR86-GW44DW-07D, IR86-GW45DW-07D, SWMU318-GW06-07D	iron	U at reported concentration	BL
IR86-GW17DW-07D, IR86-GW45DW-07D, SWMU318-GW06-07D	manganese	U at reported concentration	BL

Wet Chemistry

The associated field and method blanks exhibited contamination as noted in the following table. For blank contamination below the RL, results in the field samples are qualified as U at the parameter RL. If the result in the sample is above the RL, the affected results are reported as non-detect at the reported concentration. For blank contamination above the RL, results in field samples are qualified as U at the reported value up to the blank contamination level. Parameters for which there was no action required, are not included in the following table.

Blank ID	Parameter	Concentration	Action Level	Q Flag
MBLK	alkalinity	5.30B mg/L	RL (10 mg/L)	U
IR86-EB1-120807	chloride	1.55B mg/L	RL (2 mg/L)	
	ferrous Fe	4.14 mg/L	blank level	U at RL or reported concentration

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag	Q Code

IR86-GW40-07D	alkalinity	U at RL	BL
SWMU318-GW06-07D	chloride	U at RL	BL
IR86-GW19DW-07D	ferrous Fe	U at RL	BL
IR86-GW46IW-07D, SWMU318-GW06-07D	ferrous Fe	U at reported concentration	BL

Matrix Spike Recoveries

RSK-175

The matrix spike analyses of the sample IR86-GW23IW-07D for RSK-175 exhibited non-compliant %Rs (<58% or >120%) for methane. Specific action is noted in the following table.

MS	Compound	Samples Affected	%R	Q Flag	Q Code
IR86-GW23IW-07D	methane	IR86-GW23IW-07D	-17/33	J/UJ	MSL

Wet Chemistry

The matrix spike analyses of the sample IR86-GW23IW-07D for alkalinity exhibited non-compliant %Rs (<75% or >125%). Specific action is noted in the following table.

MS	Parameter	Samples Affected	%R	Q Flag	Q Code
IR86-GW23IW-07D	alkalinity	all field samples	28.4/15.1	J/UJ	MSL

Identification/Quantitation

RSK-175

Dilutions were required for samples IR86-GW30IW-07D and SWMU318-GW01-07D to obtain results within the calibration range for methane; therefore, E-flagged compound results were rejected in the initial analysis in favor of the corresponding D-flagged compound results in the dilutions.

Select Metals

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

Wet Chemistry

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-GW50IW-07D, USTCSFF-GW06-07D	acetone	+	CRQL	BL

RSK-175

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-GW17DW-07D, IR86-GW23IW-07D, IR86-GW30IW-07D, IR86-GW34IW-07D, IR86-GW45DW-07D, USTCSFF-GW06-07D, USTCSFF-GW06D-07D	methane	+	J	BL
IR86-GW23IW-07D	methane	+	J	MSL
IR86-GW30IW-07D, SWMU318-GW01-07D	all E flagged	+E	R	DL
IR86-GW30IW-07DDL, SWMU318-GW01-07DDL	all except corresponding D flagged results	+/-	R	DL

Select Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
IR86-GW44DW-07D, IR86-GW45DW-07D, SWMU318-GW06-07D	iron	+ up to action limit	U	BL
IR86-GW17DW-07D, IR86-GW45DW-07D, SWMU318-GW06-07D	manganese	+ up to action limit	U	BL
all samples	all analytes	+B	J	

Wet Chemistry

Sample ID	Parameter	Results	Q-Flag	Q Code
all samples	ferrous Fe ferric Fe	+/-	J/UJ	HT*
SWMU318-GW01-07D, IR86-GW46IW-07D, IR86-GW50IW-07D, IR86-GW17DW-07D, IR86-AS428-GW06-07D, IR86-GW34IW-07D	ferrous Fe	+/-	J/UJ	OT*
IR86-GW40-07D	alkalinity	+B	U at RL	BL
SWMU318-GW06-07D	chloride	+B	U at RL	BL
IR86-GW19DW-07D	ferrous Fe	+	U at RL	BL*
IR86-GW46IW-07D, SWMU318-GW06-07D	ferrous Fe	+	U at reported concentration	BL*
all samples	alkalinity	+/-	J/UJ	MSL**
all samples	all parameters	+B	J	

*Note – Ferrous iron results were flagged for holding time and lack of preservation. The HT qualifier code was used in all samples except samples IR86-GW46IW, IR86-GW19DW & SWMU318-GW06, which were also flagged for blank contamination. In these samples the BL qualifier code was used.

**The alkalinity result in sample IR86-GW46IW-07D was flagged for both blank contamination and non-compliant spike recoveries. The BL qualifier code was used.

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

CH2M HILL/VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

March 3, 2008
SDG# 14669, CompuChem
MCB Camp Lejeune—Site 86

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # 14669. The data validation was performed in accordance with the EPA CLP Statement of Work OLM04.3 method for volatiles, RSK-175 for MEE, the SW-846 Method 6010B for select metals, and the various wet chemistry methods utilized by the laboratory in the analysis of these samples. Also used in the validation of these samples were the National Functional Guidelines for Organic Data Review (October, 1999) and the National Functional Guidelines for Inorganic Data Review (October 2004), as applicable, as well as good professional judgment. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	V	RSK-175	Fe/Mn	Ions	Alk	Sulfide	Ferric Fe	Ferrous Fe	TOC
IR86-EB02052008	1466907	water	X	X	X	X	X	X	X	X	X
IR86-FB02052008	1466908	water	X	X	X	X	X	X	X	X	X
IR86-GW42IW-08A	1466902	water	X	X	X	X	X	X	X	X	X
IR86-GW42IWD-08A	1466903	water	X	X	X	X	X	X	X	X	X
IR86-GW44IW-08A	1466904	water	X	X	X	X	X	X	X	X	X
IR86-GW44IWD-08A	1466905	water	X	X	X	X	X	X	X	X	X
IR86-GW47-08A	1466906	water	X	X	X	X	X	X	X	X	X
IR86-TB02052008	1466909	water	X								
SWMU318-GW03-08A	1466901	water	X	X	X	X	X	X	X	X	X
SWMU318-GW03-08A MS	162380	water	X	X	X	X	X	X		X	X
SWMU318-GW03-08A MSD	162381	water	X	X	X	X	X	X		X	X

The following quality control samples were provided with this SDG: sample IR86-TB02052008-trip blank; sample IR86-EB02052008-equipment blank; sample Ir86-FB02052008- field blank; sample IR86-GW42IWD-08A was the field duplicate of sample IR86-GW42IW-08A; and sample IR86-GW44IWD-08A was the field duplicate of sample IR86-GW44IW-08A.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations *
- CRDL Standards *
- ICSA/ICSAB Standards *
- Blanks
- Internal Standards *
- Surrogates *
- Laboratory Control Samples *
- Matrix Spike Recoveries *
- Matrix Duplicate RPDs *
- Serial Dilution Results
- Field Duplicates *
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

Two samples required dilution to obtain results within the calibration range.

RSK

Two samples required dilution to accurately quantitate the target compound methane. The reported E flagged results were rejected in favor of the corresponding D flagged results from the dilution analyses.

Select Metals

The associated serial dilution exhibited non-compliant %Ds for both analytes. Therefore, iron and manganese were qualified as estimated in all field samples.

Wet Chemistry Parameters

The holding time was exceeded for the samples analyzed for ferrous Fe. All ferrous Fe and ferric Fe results are qualified as estimated J/UJ.

Positive results reported below the parameter reporting limit (B flagged) were qualified as estimated J.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 02/05/08. Samples were received at the laboratory 02/06/08. All sample preparation and analysis was performed within CLP and/or method holding time requirements with the following exception.

Ferrous Fe

The holding time for all samples was exceeded. All reported results for ferrous Fe and ferric Fe were qualified as estimated J/UJ, with a qualifier code of HT.

Blanks

VOA

The associated method and QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration ug/L	Reporting Limit ug/L	Action Level ug/L
VBLKJM	acetone	2J	10	20
IR86-TB120407	acetone	6J	10	60
	toluene	3J	10	15
IR86-EB1-120407	acetone	6J	10	60
	toluene	2J	10	10
IR86-EB2-120407	acetone	9J	10	90
IR86-EB1-120607	acetone	5J	10	50
IR86-EB02052008	acetone	5J	10	50
IR86-FB-02052008	acetone	3J	10	30

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW42IWD-08A, IR86-GW441W-08A, IR86-GW44IWD-08A, IR86-GW47-08A, SWMU318-GW03-08A	acetone	CRQL	BL
SWMU318-GW03-08A	toluene	CRQL	BL

Serial Dilution Results

Select Metals

The serial dilution analysis of the sample SWMU318-GW03 exhibited non-compliant %Ds (>10%) for the analytes iron and manganese. Specific action is noted in the following table.

SD ID	Analytes	Samples Affected	%D	Q Flag	Q Code
SWMU318-GW03	iron	all samples	11.9%	J/UJ	SD
	manganese		30.7%		

Identification/Quantitation

VOA

A dilution was required for samples IR86-GW42IW-08A and IR86-GW42IWD-08A to obtain results within the calibration range. Therefore, E-flagged compound results were not used in the initial analysis of these samples in favor of the corresponding D-flagged compound result in the dilution.

RSK-175

Samples in this SDG required dilution to accurately quantitate the target compound methane for samples IR86-GW44IW-08A and IR86-GW44IWD-08A. For these samples, the reported E flagged results are rejected, R, in favor of the corresponding D flagged results in the dilution analysis.

Wet Chemistry

All results reported between the IDL and the RL (B flagged by the laboratory) were qualified as estimated J. These changes do not require a qualification code.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Jacqueline A. Cleveland

Digitally signed by Jacqueline A. Cleveland
DN: CN = Jacqueline A. Cleveland, C = US, O = DataQual Environmental Services, LLC
Date: 2008.03.02 16:43:53 -06'00'

Jacqueline Cleveland
Vice-President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-GW42IWD-08A, IR86-GW441W-08A, IR86-GW44IWD-08A, IR86-GW47-08A, SWMU318-GW03-08A	acetone	+	B	BL
SWMU318-GW03-08A	toluene	+	B	BL
IR86-GW42IW-08A, IR86-GW42IWD-08A	all E-flagged results	+	R	DL
IR86-GW42IW-08ADL, IR86-GW42IWD-08ADL	all results except D-flagged compounds	+/-	R	DL

RSK-175

Sample ID	Compound	Results	Q-Flag	Q Code
IR86-GW44IW-08A, IR86-GW44IWD-08A	methane	+E	R	DL
IR86-GW44IW-08ADL, IR86-GW44IWD-08ADL	ethane ethene	+/-	R	DL

Select Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
all field samples	iron manganese	+/-	J/UJ	SD

Wet Chemistry

Sample ID	Parameter	Results	Q-Flag	Q Code
all samples	ferrous Fe ferric Fe	+/-	J/UJ	HT
all samples	all parameters	+B	J	

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
Q code	qualifier code
+	positive result
-	non-detect result IDL
IDL	Instrument Detection Limit
MDL	Method Detection Limit
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High Moisture content

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15527

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW381WB	1552701	Water
1MS	IR86-GW381WBMS	1552701MS	Water
1MSD	IR86-GW381WBMSD	1552701MSD	Water
2	IR86-GW38IAW	1552702	Water
3	IR86-GW38IWC	1552703	Water
4	IR86-GW28IW	1552704	Water
5	IR86-GW33IW	1552705	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
Manganese	0.932	4.66	None	All >5X

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	None	ND	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike - The matrix spike samples exhibited acceptable %R values.

Matrix Duplicate - The matrix duplicate samples exhibited acceptable RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Quantitation - No discrepancies were identified.

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-GW38IWB

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15527

Matrix (soil/water): WATER Lab Sample ID: 1552701

Level (low/med): LOW Date Received: 06/11/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	2530			P
7439-96-5	Manganese	114			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

2

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-GW38IAW

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15527

Matrix (soil/water): WATER Lab Sample ID: 1552702

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	74900			P
7439-96-5	Manganese	760			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

3

EPA SAMPLE NO.

IR86-GW38IWC

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15527

Matrix (soil/water): WATER Lab Sample ID: 1552703

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	4790			P
7439-96-5	Manganese	419			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

4

EPA SAMPLE NO.

IR86-GW28IW

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15527

Matrix (soil/water): WATER Lab Sample ID: 1552704

Level (low/med): LOW Date Received: 06/13/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	4230			P
7439-96-5	Manganese	59.9			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

5

EPA SAMPLE NO.

IR86-GW33IW

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15527

Matrix (soil/water): WATER Lab Sample ID: 1552705

Level (low/med): LOW Date Received: 06/13/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	7380			P
7439-96-5	Manganese	160			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15527

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW38IWB	0806031-01	Water
2	IR86-GW38IWBD	0806031-02	Water
3	IR86-GW53	0806031-03	Water
4	IR86-GW47	0806031-04	Water
4MS	IR86-GW47MS	0806031-04MS	Water
4MSD	IR86-GW47MSD	0806031-04MSD	Water
5	IR86-TB06102008	0806031-05	Water
6	IR86-EB60102008	0806031-06	Water
7	IR86-GW56IW	0806031-07	Water
7DL	IR86-GW56IWDL	0806031-07DL	Water
8	IR86-GW52	0806031-08	Water
9	IR86-GW38IAW	0806031-09	Water
10	IR86-GW38IWC	0806031-10	Water
11	IR86-EB02-06102008	0806031-11	Water
12	IR86-TB06112008	0806031-12	Water
14	IR86-GW54IW	0806031-14	Water
14DL	IR86-GW54IWDL	0806031-14DL	Water
15	IR86-TB0612208	0806031-15	Water
16	IR86-GW49DW	0806031-16	Water
16DL	IR86-GW49DWDL	0806031-16DL	Water
17	IR86-GW55IW	0806031-17	Water
17DL	IR86-GW55IWDL	0806031-17DL	Water
18	IR86-GW28IW	0806031-18	Water
19	IR86-EB01-06122008	0806031-19	Water
20	IR86-GW09	0806031-20	Water
21	IR86-GW09D	0806031-21	Water
22	IR86-TB06132008	0806031-22	Water
23	IR86-GW33IW	0806031-23	Water
24	IR86-GW34IW	0806031-24	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, USEPA "Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June 2001 and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples except the following.

Sample	Date Sampled	Date Analyzed	# of Days	Qualifier
2	6/10/08	6/26/08	16	J/UJ

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
06/02/08 HP73	Methyl acetate	31.0%	None	Sample ND

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following. EDS sample ID #2 exhibited several compounds with elevated %D values, but was already qualified due to holding times.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
06/13/08 1750	Carbon tetrachloride	33.6%	J/UJ	6
	Methylcyclohexane	30.8%	J/UJ	6

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
1	1,1-Dichloroethene-d2	54%	J/UJ
	1,2-Dichloroethane-d4	134%	J
6	Chloroethane-d5	138%	J
11	1,1-Dichloroethene-d2	51%	J/UJ
	1,2-Dichloroethane-d4	136%	J
12	1,1-Dichloroethene-d2	50%	J/UJ
	1,2-Dichloroethane-d4	132%	J
14	1,1-Dichloroethene-d2	114%	J
14DL	1,2-Dichloroethane-d4	120%	J
15	Chloroethane-d5	136%	None - Associated ND
	1,2-Dichloroethane-d4	133%	None - Associated ND
16DL	1,2-Dichloroethane-d4	132%	J
17	Vinyl chloride-d3	133%	J
	1,1-Dichloroethene-d2	178%	J
19	2-Hexanone-d5	137%	None - All associated ND

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
4	Benzene	129%/Ok/12	j
	Trichloroethene	130%/Ok/Ok	J

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
VBLKGU 6113	Methylene chloride	0.24	2.4	U	6
	4-Methyl-2-pentanone	1.5	7.5	None	All ND
	2-Hexanone	3.6	18.0	None	All ND
	1,2,4-Trichlorobenzene	0.23	1.15	None	All ND
	1,2,3-Trichlorobenzene	0.25	1.25	None	All ND
VBLKHJ 6114	Methylene chloride	0.29	2.9	U	3, 4
	2-Hexanone	1.7	8.5	None	All ND
	1,2,3-Trichlorobenzene	0.12	0.60	None	All ND
VBLKHM 6116	Methylene chloride	0.31	3.1	U	7DL, 18-24
VBLKIE 6126	2-Hexanone	3.4	17.0	U	2

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB06102008	None	ND	ND	-	-
IR86-EB06102008	Chloromethane	0.32	1.6	None	All ND
	cis-1,2-Dichloroethene	0.11	0.55	None	All ND
	Chloroform	0.14	0.70	None	All ND
	Trichloroethene	0.16	0.80	U	7, 7DL, 10
	1,2-Dichlorobenzene	0.13	0.65	None	All ND
IR86-EB02-06102008	None	ND	-	-	-
IR86-TB06112008	None	ND	-	-	-
IR86-TB061208	cis-1,2-Dichloroethene	0.13	0.65	None	All ND or >5X
IR86-EB01061208	None	ND	-	-	-
IR86-TB061308	None	ND	-	-	
IR86-FB06112008	Acetone	12	120	U	1-6, 7DL, 8-10, 12, 14, 16, 16DL, 17DL, 18, 19, 22, 23, 24
	2-Butanone	2.4	24	U	2, 10, 12, 19

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	Toluene	0.14	0.70	U	5, 6, 7, 9, 16, 17

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW38IWB ug/L	IR86-GW38IWBD ug/L	RPD	Qualifier
Vinyl chloride	2.2	0.50 U	NC	None
1,1-Dichloroethene	1.3	0.50 U	NC	None
Acetone	14	11	24%	None
Carbon disulfide	2.5 U	0.52	NC	None
Methylene chloride	2.5 U	0.21	NC	None
trans-1,2-Dichloroethene	0.65	0.14	129%	None
1,1-Dichloroethane	4.1	0.15	186%	None
cis-1,2-Dichloroethene	99	15	147%	None
2-Butanone	25 U	2.3	NC	None
Benzene	0.51	0.50 U	NC	None
Trichloroethene	48	13	115%	None

Compound	IR86-GW09 ug/L	IR86-GW09D ug/L	RPD	Qualifier
1,1,2-Trichloro-1,2,2-trifluoroethane	0.49	0.40	20%	None
Carbon disulfide	0.15	0.50 U	NC	None

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (JN) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation - Several samples exhibited high concentrations of target compounds and flagged (E) by the laboratory. These samples were reanalyzed at various dilutions and the original results were replaced with the dilution results. The original Form Is should be used for reporting purposes.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IWB

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	2.5	U	
74-87-3	Chloromethane	2.5	U	
75-01-4	Vinyl chloride	2.2	J	
74-83-9	Bromomethane	2.5	U	
75-00-3	Chloroethane	2.5	U	
75-69-4	Trichlorofluoromethane	2.5	U	
75-35-4	1,1-Dichloroethene	1.3	~~J~~	J SSH
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.5	U	
67-64-1	Acetone	25 ~~14~~	~~J~~	U BL
75-15-0	Carbon disulfide	2.5	U	
79-20-9	Methyl acetate	2.5	U	
75-09-2	Methylene chloride	2.5	U	
156-60-5	trans-1,2-Dichloroethene	0.65	~~J~~	J SSL
1634-04-4	Methyl tert-butyl ether	2.5	U	
75-34-3	1,1-Dichloroethane	4.1		
156-59-2	cis-1,2-Dichloroethene	99		J SSL
78-93-3	2-Butanone	25	U	
74-97-5	Bromochloromethane	2.5	U	
67-66-3	Chloroform	2.5	U	
71-55-6	1,1,1-Trichloroethane	2.5	U	
110-82-7	Cyclohexane	2.5	U	
56-23-5	Carbon tetrachloride	2.5	U	
71-43-2	Benzene	0.51	J	
107-06-2	1,2-Dichloroethane	2.5	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

Qw 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-GW38IWB

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	48	
108-87-2	Methylcyclohexane	2.5	U
78-87-5	1,2-Dichloropropane	2.5	U
75-27-4	Bromodichloromethane	2.5	U
10061-01-5	cis-1,3-Dichloropropene	2.5	U
108-10-1	4-Methyl-2-pentanone	25	U
108-88-3	Toluene	2.5	U
10061-02-6	trans-1,3-Dichloropropene	2.5	U
79-00-5	1,1,2-Trichloroethane	2.5	U
127-18-4	Tetrachloroethene	2.5	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	2.5	U
106-93-4	1,2-Dibromoethane	2.5	U
108-90-7	Chlorobenzene	2.5	U
100-41-4	Ethylbenzene	2.5	U
95-47-6	o-Xylene	2.5	U
179601-23-1	m,p-Xylene	2.5	U
100-42-5	Styrene	2.5	U
75-25-2	Bromoform	2.5	U
98-82-8	Isopropylbenzene	2.5	U
79-34-5	1,1,2,2-Tetrachloroethane	2.5	U
541-73-1	1,3-Dichlorobenzene	2.5	U
106-46-7	1,4-Dichlorobenzene	2.5	U
95-50-1	1,2-Dichlorobenzene	2.5	U
96-12-8	1,2-Dibromo-3-chloropropane	2.5	U
120-82-1	1,2,4-Trichlorobenzene	2.5	U
87-61-6	1,2,3-Trichlorobenzene	2.5	U

RW 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW38IWB

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-171.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-trifluo	6.23	16	~~JN~~ JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (8/2007)

LW 8/15/08.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IWBD

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0290.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q		
75-71-8	Dichlorodifluoromethane	0.50	U	UJ	HT
74-87-3	Chloromethane	0.50	U		
75-01-4	Vinyl chloride	0.50	U		
74-83-9	Bromomethane	0.50	U		
75-00-3	Chloroethane	0.50	U		
75-69-4	Trichlorofluoromethane	0.50	U		
75-35-4	1,1-Dichloroethene	0.50	U		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U		
67-64-1	Acetone	11		UJ	,BL
75-15-0	Carbon disulfide	0.52		J	
79-20-9	Methyl acetate	0.50	U	UJ	
75-09-2	Methylene chloride	0.21	J	J	
156-60-5	trans-1,2-Dichloroethene	0.14	J		
1634-04-4	Methyl tert-butyl ether	0.50	U	UJ	
75-34-3	1,1-Dichloroethane	0.15	J	J	
156-59-2	cis-1,2-Dichloroethene	15			
78-93-3	2-Butanone	5.0 ~~2.3~~	J	UJ	BL
74-97-5	Bromochloromethane	0.50	U	UJ	
67-66-3	Chloroform	0.50	U		
71-55-6	1,1,1-Trichloroethane	0.50	U		
110-82-7	Cyclohexane	0.50	U		
56-23-5	Carbon tetrachloride	0.50	U		
71-43-2	Benzene	0.50	U		
107-06-2	1,2-Dichloroethane	0.50	U		

Report 1,4-Dioxane for Low-Medium VOA analysis only

fcW 8/15/08

2

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IWBD

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0290.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
79-01-6	Trichloroethene	13		J HT
108-87-2	Methylcyclohexane	0.50	U	UJ
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	U	
79-00-5	1,1,2-Trichloroethane	0.50	U	
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0 ~~1.8~~	~~JB~~	UJ BL, HT
124-48-1	Dibromochloromethane	0.50	U	UJ HT
106-93-4	1,2-Dibromoethane	0.50	U	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
95-47-6	o-Xylene	0.50	U	
179601-23-1	m,p-Xylene	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	U	
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LCW 8/15/08

2

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW38IWBD

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0290.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/11/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		UNKNOWN	0.00		U
02		Unknown	4.19	150	~~J~~ J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

LW 8/15/08

3

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW53

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	14		U BL
75-15-0	Carbon disulfide	0.48	J	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50 ~~0.22~~	~~JB~~	U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.25	J	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

3

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW53

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

RW
8/15/08

3

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW53

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0371.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	4.17	2.8	J
02		Unknown	4.62	0.89	J
03		Unknown	6.23	1.7	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

J

[1]EPA-designated Registry Number.

JCC 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW47

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-04

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0 ~~2.9~~	~~J~~	U, BL
75-15-0	Carbon disulfide	0.20	J	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50 ~~0.14~~	~~JB~~	U, BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.20	J	
156-59-2	cis-1,2-Dichloroethene	0.43	J	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	2.1		
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	6.3		J MSH
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW47

Lab Name: COMPUCHEM
Contract: N62470-02-D-3052
Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527
Matrix: (SOIL/SED/WATER) WATER
Lab Sample ID: 0806031-04
Sample wt/vol: 25.0 (g/mL) mL
Lab File ID: 0806031-0471.d
Level: (TRACE/LOW/MED) TRACE
Date Received: 06/12/2008
% Moisture: not dec.
Date Analyzed: 06/14/2008
GC Column: SPB-624 ID: 0.32 (mm)
Dilution Factor: 1.0
Soil Extract Volume: (uL)
Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	J MSH
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.15	J
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lw 8/15/08

4

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW47

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-04

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0471.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01		Unknown	4.15	20	~~J~~	J
02		Unknown	5.44	2.6	~~J~~	
03		Unknown	7.14	3.3	~~J~~	
04		Unknown	10.73	0.58	~~J~~	
05		Unknown	11.68	1.7	~~J~~	
06	611-14-3	Benzene, 1-ethyl-2-methyl-	13.35	0.60	JN	JN
07	526-73-8	Benzene, 1,2,3-trimethyl-	13.65	0.83	JN	JN
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[1]	Total Alkanes	N/A			

[1]EPA-designated Registry Number.

QW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-05

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0571.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~4.6~~	J UBL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

JLO 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-05

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0571.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-TB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-05

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0571.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	7446-09-5	Sulfur dioxide $$ Fermenicide powde	4.18	3.0	~~JN~~ JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

kw 8/15/08

6

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0673.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.32	~~J~~	J SSH
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	10		U BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	2.1	~~B~~	U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.11	J	
78-93-3	2-Butanone	5.0 ~~2.7~~	~~J~~	U BL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.14	J	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	~~U~~	UJ CCH
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

6

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0673.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
79-01-6	Trichloroethene	0.16	J	
108-87-2	Methylcyclohexane	0.50	~~U~~	UJ CCH
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50 ~~0.12~~	~~J~~	u BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U	
79-00-5	1,1,2-Trichloroethane	0.50	U	
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	U	
106-93-4	1,2-Dibromoethane	0.50	U	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
95-47-6	o-Xylene	0.50	U	
179601-23-1	m,p-Xylene	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	U	
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.13	J	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LW 8/15/08

6

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0673.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	5.77	1.5	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (8/2007)

LW 8/15/08

7

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW56W

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	11	
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	1.4	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.81	
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.12	J
156-59-2	cis-1,2-Dichloroethene	11 ~~26~~	~~E~~ R DL
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	1.5	
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (8/2007)

8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW56W

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.68	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.11~~	~~J~~
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

U, BL

U BL

8/15/08

7

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW56W

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0771.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.23	7.7	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (8/2007)

8/15/08

7DL

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW56IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-07D271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0 use original

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	4.6	
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.11	J
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~4.1~~	~~J~~ U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50 ~~0.40~~	~~JB~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.38	J
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	11	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.70	
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

7DL

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW56IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-07D271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

Use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	~~0.32~~ 0.50	~~J~~ U, BL
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

8/15/08

7DL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW56IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-07RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-07D271.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008 Use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.06	0.94	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (8/2007)

LW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW52

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-08

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0871.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~2.8~~	~~J~~ U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	2.7	
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

KW 8/15/08

8

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW52

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-08

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0871.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.1	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	1.3	
95-47-6	o-Xylene	0.94	
179601-23-1	m,p-Xylene	1.7	
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.14	J
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

u. BL

LW
8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW52

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-08

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0871.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	95-63-6	Benzene, 1,2,4-trimethyl- $$ .psi.-	13.35	0.56	JN
02	526-73-8	Benzene, 1,2,3-trimethyl- $$ Hemime	13.65	1.2	JN
03	271-89-6	Benzofuran	13.93	1.8	JN
04	496-11-7	Indane	14.19	19	JN
05	95-13-6	Indene	14.38	5.2	JN
06	4265-25-2	Benzofuran, 2-methyl- $$ 2-Methylbe	14.96	0.57	JN
07	275-51-4	Azulene	16.07	40	JN
08	95-15-8	Benzo[b]thiophene	16.23	1.2	JN
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

JN

[1]EPA-designated Registry Number.

8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IAW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-09

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0971.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.7	U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.85	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.32	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

hw 8/15/08

9

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IAW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-09

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0971.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	1.5	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.12~~	~~J~~ u BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LW 8/15/08

9

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW38IAW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-09

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-0971.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.78	1.8	J
02	91-20-3	Naphthalene	16.07	1.5	JN
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

J
JN

[1]EPA-designated Registry Number.

QW
8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IWC

Lab Name: COMPUCHEM
Contract: N62470-02-D-3052
Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527
Matrix: (SOIL/SED/WATER) WATER
Lab Sample ID: 0806031-10
Sample wt/vol: 25.0 (g/mL) mL
Lab File ID: 0806031-1071.d
Level: (TRACE/LOW/MED) TRACE
Date Received: 06/12/2008
% Moisture: not dec.
Date Analyzed: 06/14/2008
GC Column: SPB-624 ID: 0.32 (mm)
Dilution Factor: 1.0
Soil Extract Volume: (uL)
Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	7.0	U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.48	J
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	3.6	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

MW 8/15/08

10

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW38IWC

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-10

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1071.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.64	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

U, BL

JW 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW38IWC

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-10

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1071.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

RW 8/15/08

11

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-11

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	~~U~~ UJ SSL
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	~~U~~ UJ SSL
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LCW 8/15/08

11

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-11

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

fw 8/15/08

11

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB02-06102008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-11

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1171.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

RW 8/15/08

12

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-12

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0 ~~3.9~~	~~J~~	U BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	~~J~~	UJ SSL
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	~~J~~	UJ SSL
78-93-3	2-Butanone	21		U BL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

JW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-12

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

KW 8/15/08

12

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-TB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-12

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1271.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

hw 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW54IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.16	J	
75-01-4	Vinyl chloride	2.3		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	4.7		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0 ~~2.6~~	~~J~~	U BL
75-15-0	Carbon disulfide	0.39	J	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.38	~~J~~	J SSH
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	160 J SSH ~~150~~	~~E~~	R DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.0		
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

hw 8/15/08

14

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW54IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref. No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	140 ~~120~~	~~B~~ R
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	7.9	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

RW 8/15/08

14

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW54IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1471.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.22	40	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

MW 8/15/08

14D

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW54IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-14D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008 Use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	130	U
75-15-0	Carbon disulfide	13	U
79-20-9	Methyl acetate	13	U
75-09-2	Methylene chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-butyl ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	160	~~U~~ J SSH
78-93-3	2-Butanone	130	U
74-97-5	Bromochloromethane	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

14DL

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW54IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-14D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008 use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	140	D
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-pentanone	130	U
108-88-3	Toluene	40	D
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	130	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
95-47-6	o-Xylene	13	U
179601-23-1	m,p-Xylene	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U
87-61-6	1,2,3-Trichlorobenzene	13	U

LW 8/15/08

14D1

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW54IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: _____ SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-14RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-14D71.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. _____ Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

use ORIGINAL

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-trifluo	6.23	48	~~JDN~~ JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

JW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB061208

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-15

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1571.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.13	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

MW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB061208

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-15

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1571.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LCW
8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-TB061208

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-15

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1571.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

JW 8/15/08

16

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW49DW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1671.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	29 ~~29~~	~~E~~	R DL
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	2.1		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0 ~~2.9~~	~~J~~	u BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	1.0		
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	35 ~~33~~	~~E~~	R DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.46	J	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

16

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW49DW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1671.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.27	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.23~~	~~J~~ U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LCW 8/15/08

16

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW49DW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1671.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.23	1.6	J
02		Unknown	6.78	1.3	J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

J
J

lcs 8/15/08

16DL

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW49DWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-16D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.6

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

use original

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	2.8	U
74-87-3	Chloromethane	2.8	U
75-01-4	Vinyl chloride	29	D
74-83-9	Bromomethane	2.8	U
75-00-3	Chloroethane	2.8	U
75-69-4	Trichlorofluoromethane	2.8	U
75-35-4	1,1-Dichloroethene	1.8	~~JD~~ J SSH
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.8	U
67-64-1	Acetone	28 ~~14~~	~~JD~~ U BL
75-15-0	Carbon disulfide	2.8	U
79-20-9	Methyl acetate	2.8	U
75-09-2	Methylene chloride	2.8	U
156-60-5	trans-1,2-Dichloroethene	0.95	JD
1634-04-4	Methyl tert-butyl ether	2.8	U
75-34-3	1,1-Dichloroethane	2.8	U
156-59-2	cis-1,2-Dichloroethene	35	D
78-93-3	2-Butanone	28	U
74-97-5	Bromochloromethane	2.8	U
67-66-3	Chloroform	2.8	U
71-55-6	1,1,1-Trichloroethane	2.8	U
110-82-7	Cyclohexane	2.8	U
56-23-5	Carbon tetrachloride	2.8	U
71-43-2	Benzene	0.59	JD
107-06-2	1,2-Dichloroethane	2.8	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

hw 8/15/08

16DL

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW49DWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-16D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.6

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

use original

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	2.8	U
108-87-2	Methylcyclohexane	2.8	U
78-87-5	1,2-Dichloropropane	2.8	U
75-27-4	Bromodichloromethane	2.8	U
10061-01-5	cis-1,3-Dichloropropene	2.8	U
108-10-1	4-Methyl-2-pentanone	28	U
108-88-3	Toluene	2.8	U
10061-02-6	trans-1,3-Dichloropropene	2.8	U
79-00-5	1,1,2-Trichloroethane	2.8	U
127-18-4	Tetrachloroethene	2.8	U
591-78-6	2-Hexanone	28	U
124-48-1	Dibromochloromethane	2.8	U
106-93-4	1,2-Dibromoethane	2.8	U
108-90-7	Chlorobenzene	2.8	U
100-41-4	Ethylbenzene	2.8	U
95-47-6	o-Xylene	2.8	U
179601-23-1	m,p-Xylene	2.8	U
100-42-5	Styrene	2.8	U
75-25-2	Bromoform	2.8	U
98-82-8	Isopropylbenzene	2.8	U
79-34-5	1,1,2,2-Tetrachloroethane	2.8	U
541-73-1	1,3-Dichlorobenzene	2.8	U
106-46-7	1,4-Dichlorobenzene	2.8	U
95-50-1	1,2-Dichlorobenzene	2.8	U
96-12-8	1,2-Dibromo-3-chloropropane	2.8	U
120-82-1	1,2,4-Trichlorobenzene	2.8	U
87-61-6	1,2,3-Trichlorobenzene	2.8	U

LW
8/15/08

16DL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW49DWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-16RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-16D71.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 5.6

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

use ORIGINAL

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

lw 8/15/08

17

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW55IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	210 ~~180~~	~~E~~	R DL
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	16		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.17	J	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	6.8		J SSH
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.20	J	
156-59-2	cis-1,2-Dichloroethene	170 ~~160~~	~~E~~	R DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	2.4		
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

17

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW55IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	1.0	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.61	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

U BL

AW 8/15/08

17

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW55IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1771.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/14/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.23	8.9	~~J~~ J
02		Unknown	11.68	1.2	~~J~~ J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

LW 8/15/08

171

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW55IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-17D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008 Use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl chloride	210	D
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	15	D
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	130 ~~61~~	~~JD~~ U BL
75-15-0	Carbon disulfide	13	U
79-20-9	Methyl acetate	13	U
75-09-2	Methylene chloride	13	U
156-60-5	trans-1,2-Dichloroethene	4.5	JD
1634-04-4	Methyl tert-butyl ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	170	D
78-93-3	2-Butanone	130	U
74-97-5	Bromochloromethane	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon tetrachloride	13	U
71-43-2	Benzene	2.7	JD
107-06-2	1,2-Dichloroethane	13	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

17DL

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW55IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-17D71.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

use 0ng NAC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-pentanone	130	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	130	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
95-47-6	o-Xylene	13	U
179601-23-1	m,p-Xylene	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U
87-61-6	1,2,3-Trichlorobenzene	13	U

KW
8/15/08

17DL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW55IWDL

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-17RE1

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-17D71.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/15/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 25.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

use original

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

QW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW28IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-18

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1871.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~3.0~~	~~J~~ U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50 ~~0.36~~	~~JB~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.19	J
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	1.0	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.32	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW28IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-18

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1871.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	1.0	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lw 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW28IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-18

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1871.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

hw 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01061208

Lab Name: COMPUCHEM
Contract: N62470-02-D-3052
Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527
Matrix: (SOIL/SED/WATER) WATER
Lab Sample ID: 0806031-19
Sample wt/vol: 25.0 (g/mL) mL
Lab File ID: 0806031-1971.d
Level: (TRACE/LOW/MED) TRACE
Date Received: 06/13/2008
% Moisture: not dec.
Date Analyzed: 06/16/2008
GC Column: SPB-624 ID: 0.32 (mm)
Dilution Factor: 1.0
Soil Extract Volume: (uL)
Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	15		u BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	1.0	~~B~~	u BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0 ~~3.6~~	~~J~~	u BL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01061208

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-19

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1971.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LCW 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB01061208

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-19

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-1971.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.19	1.2	J
02		Unknown	6.78	1.2	J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

JW

JW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW09

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-20

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2071.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.49	J
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.15	J
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50 ~~0.38~~	~~JB~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

20

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW09

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-20

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2071.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lw 8/15/08

20

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW09

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-20

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2071.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (8/2007)

RW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW09D

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-21

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.40	J
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50 ~~0.30~~	~~JB~~ u BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

MW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW09D

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-21

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

hw 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW09D

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-21

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2171.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.18	0.72	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

RW 8/15/08

22

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB061308

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-22

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~4.0~~	~~J~~ U BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	~~JB~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

RW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-TB061308

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-22

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

MW 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-TB061308

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-22

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2271.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	15.80	0.65	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

LW 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW33IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-23

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0 ~~4.2~~	~~J~~	U BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50 ~~0.26~~	~~JB~~	U BL
156-60-5	trans-1,2-Dichloroethene	0.15	J	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	4.3		
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

hw 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW33IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-23

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	1.9	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lw 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW33IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-23

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2371.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

lw 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW34IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-24

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0 ~~3.3~~	~~J~~ U BL
75-15-0	Carbon disulfide	0.50	
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50 ~~0.25~~	~~JB~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.39	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-GW34IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-24

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	2.1	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LW 8/15/08

24

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-GW34IW

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806031 Mod. Ref No.: SDG No.: 15527

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806031-24

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806031-2471.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	3.85	1.6	J
02		UNKNOWN	4.15	35	J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

J
J

SOM01.2 (8/2007)

RW 8/15/08

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15560

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW01-08B	1556001	Water
1MS	IR86-SW01-08BMS	1556001MS	Water
1MSD	IR86-SW01-08BMSD	1556001MSD	Water
2	IR86-SW02-08B	1556002	Water
3	IR86-SW02D-08B	1556003	Water
4	IR86-FB06112008	1556004	Water
5	IR86-EB01-06112008	1556005	Water
6	IR86-EB02-06112008	1556006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. ug/L	Qualifier	Affected Samples
Aluminum	44.340	U	1-3, 6
Beryllium	0.353	U	1-6
Calcium	39.462	U	4, 5
Chromium	1.813	U	4

Compound	Conc. ug/L	Qualifier	Affected Samples
Magnesium	35.793	U	1-3
Manganese	1.070	U	1-6

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
IR86-EB01-06112008	None	ND	-	-
IR86-FB06112008	Sodium	211	U	1-3, 6

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike - The matrix spike samples exhibited acceptable %R values.

Matrix Duplicate - The matrix duplicate samples exhibited acceptable RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

ICP Sample ID	Compound	%D	Qualifier	Affected Samples
IR86-SW01-08B	Barium	41%	J/UJ	All samples
	Manganese	14%	J/UJ	All samples
	Potassium	20%	J/UJ	All samples

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW02-08B ug/L	IR86-SW02D-08B ug/L	RPD	Qualifier
Barium	8.5	8.2	4%	None
Calcium	22300	21800	2%	None
Iron	714	573	22%	None
Lead	2.7	10.0 U	NC	None
Potassium	830	799	4%	None
Vanadium	2.3	1.6	36%	None

Compound Quantitation - No discrepancies were identified.

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SW01-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556001

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200 ~~98.0~~	~~J~~	U	P	BL
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	9.2	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	5 ~~0.32~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	20500			P	
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	50.0	U		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	688			P	
7439-92-1	Lead	10.0	U		P	
7439-95-4	Magnesium	5000 ~~793~~	~~J~~	U	P	BL
7439-96-5	Manganese	21.6		UJ ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	871	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	5000 ~~4310~~	~~J~~	U	P	BL
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	1.8	J		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

2

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SW02-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556002

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200 ~~171~~	~~J~~	U	P	BL
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	8.5	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	5 ~~0.22~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	22300			P	
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	50.0	U		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	714			P	
7439-92-1	Lead	2.7	J		P	
7439-95-4	Magnesium	5000 ~~817~~	~~J~~	U	P	BL
7439-96-5	Manganese	15 ~~12.8~~	~~J~~	U J ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	830	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	5000 ~~4830~~	~~J~~	U	P	BL
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	2.3	J		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

3

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SW02D-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556003

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200 ~~79.2~~	~~J~~	U	P	BL
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	8.2	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	5 0.~~088~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	21800			P	
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	50.0	U		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	573			P	
7439-92-1	Lead	10.0	U		P	
7439-95-4	Magnesium	5000 ~~815~~	~~J~~	U	P	BL
7439-96-5	Manganese	15 ~~10.9~~	~~J~~	U J ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	799	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	5000 ~~4910~~	~~J~~	U	P	BL
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	1.6	J		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

4

EPA SAMPLE NO.

IR86-FB06112008

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556004

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200	U		P	
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	200	~~U~~	UJ ~~E~~	P	SD
7440-41-7	Beryllium	5 ~~0.17~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	5000 ~~9.5~~	~~J~~	U	P	BL
7440-47-3	Chromium	10 ~~0.53~~	~~J~~	U	P	BL
7440-48-4	Cobalt	50.0	U		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	100	U		P	
7439-92-1	Lead	10.0	U		P	
7439-95-4	Magnesium	5000	U		P	
7439-96-5	Manganese	15 ~~1.0~~	~~J~~	UJ ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	5000	~~U~~	UJ ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	211	J		P	
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	50.0	U		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

5

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-EB01-06112008

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556005

Level (low/med): LOW Date Received: 06/13/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200	U		P	
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	200	~~U~~	UJ ~~E~~	P	SD
7440-41-7	Beryllium	5 ~~0.13~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	5000 ~~11.2~~	~~J~~	U	P	BL
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	50.0	U		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	100	U		P	
7439-92-1	Lead	10.0	U		P	
7439-95-4	Magnesium	5000	U		P	
7439-96-5	Manganese	15 ~~1.0~~	~~J~~	UJ ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	5000	~~U~~	UJ ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	5000	U		P	
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	50.0	U		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

6

EPA SAMPLE NO.

IR86-EB02-06112008

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15560

Matrix (soil/water): WATER Lab Sample ID: 1556006

Level (low/med): LOW Date Received: 06/13/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	200 ~~14.9~~	~~J~~	U	P	BL
7440-36-0	Antimony	60.0	U		P	
7440-38-2	Arsenic	10.0	U		P	
7440-39-3	Barium	200	~~U~~	UJ ~~E~~	P	SD
7440-41-7	Beryllium	5 ~~0.16~~	~~J~~	U	P	BL
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	5000 ~~74.3~~	~~J~~	U	P	BL
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	0.69	J		P	
7440-50-8	Copper	25.0	U		P	
7439-89-6	Iron	100	U		P	
7439-92-1	Lead	10.0	U		P	
7439-95-4	Magnesium	5000	U		P	
7439-96-5	Manganese	15 ~~1.4~~	~~J~~	UJ ~~E~~	P	BL, SD
7440-02-0	Nickel	40.0	U		P	
7440-09-7	Potassium	6.8	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	35.0	U		P	
7440-22-4	Silver	10.0	U		P	
7440-23-5	Sodium	5000 ~~260~~	~~J~~	U	P	BL
7440-28-0	Thallium	25.0	U		P	
7440-62-2	Vanadium	50.0	U		P	
7440-66-6	Zinc	60.0	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDRCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15560

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW01-08B	0806032-01	Water
1MS	IR86-SW01-08BMS	0806032-01MS	Water
1MSD	IR86-SW01-08BMSD	0806032-01MSD	Water
1RE	IR86-SW01-08BRE	0806032-01RE	Water
2	IR86-SW02-08B	0806032-02	Water
3	IR86-SW02D-08B	0806032-03	Water
3RE	IR86-SW02D-08BRE	0806032-03RE	Water
4	IR86-FB06112008	0806032-04	Water
4RE	IR86-FB06112008RE	0806032-04RE	Water
5	IR86-EB01-06112008	0806032-05	Water
5RE	IR86-EB01-06112008RE	0806032-05RE	Water
6	IR86-EB02-06112008	0806032-06	Water
6RE	IR86-EB02-06112008RE	0806032-06RE	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
07/08/08	Benzo (g,h,i) perylene	26.8%	J/UJ	1-6

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
1	Fluoranthene-d10	26%	J/UJ
3	Fluoranthene-d10	48%	J/UJ
	2-Methylnaphthalene-d10	47%	J/UJ
3RE	Fluoranthene-d10	50%	J/UJ
	2-Methylnaphthalene-d10	45%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
1	IS4-Phenanthrene-d10	High	None - All compounds ND

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
SBLKZZ	Naphthalene	0.049	0.245	U	1, 1RE, 2, 4, 4RE, 5, 5RE, 6, 6RE

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008RE	Fluoranthene	0.016	0.08	U	2
	Pyrene	0.020	0.10	U	2
	Benzo (a) anthracene	0.015	0.075	U	None - All ND
	Chrysene	0.016	0.08	U	2
IR86-EB01-06112008RE	2-Methylnaphthlene	0.12	0.60	None	All associated ND
	Acenaphthene	0.14	0.70	None	All associated ND
	PCP	0.22	1.1	None	All associated ND
	Pyrene	0.30	1.5	None	All associated ND

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW02-08B ug/L	IR86-SW02D-08B ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Several samples were reanalyzed due to low surrogate recovery values. The reanalysis Form Is should be used for reporting purposes.

1

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 925 (g/mL) mL Lab File ID: 0806032-01J2A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

use reanalysis

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.11 ~~0.038~~	~~JB~~ UJ BL, SSL
91-57-6	2-Methylnaphthalene	0.11	U UJ SSL
208-96-8	Acenaphthylene	0.11	U
83-32-9	Acenaphthene	0.11	U
86-73-7	Fluorene	0.11	U
87-86-5	Pentachlorophenol	0.22	U
85-01-8	Phenanthrene	0.11	U
120-12-7	Anthracene	0.11	U
206-44-0	Fluoranthene	0.11	U
129-00-0	Pyrene	0.11	U
56-55-3	Benzo (a) anthracene	0.11	U
218-01-9	Chrysene	0.11	U
205-99-2	Benzo (b) fluoranthene	0.11	U
207-08-9	Benzo (k) fluoranthene	0.11	U
50-32-8	Benzo (a) pyrene	0.11	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.11	U
53-70-3	Dibenzo (a,h) anthracene	0.11	U
191-24-2	Benzo (g,h,i) perylene	0.11	U UJ CCH

SOM01.2 (8/2007)

lw 8/15/08

1RE

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08BRE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01RE2

Sample wt/vol: 925 (g/mL) mL Lab File ID: 0806032-01J4A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/09/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.11 ~~0.047~~	~~JB~~ U BL
91-57-6	2-Methylnaphthalene	0.11	U
208-96-8	Acenaphthylene	0.11	U
83-32-9	Acenaphthene	0.11	U
86-73-7	Fluorene	0.11	U
87-86-5	Pentachlorophenol	0.22	U
85-01-8	Phenanthrene	0.11	U
120-12-7	Anthracene	0.11	U
206-44-0	Fluoranthene	0.11	U
129-00-0	Pyrene	0.11	U
56-55-3	Benzo (a) anthracene	0.11	U
218-01-9	Chrysene	0.11	U
205-99-2	Benzo (b) fluoranthene	0.11	U
207-08-9	Benzo (k) fluoranthene	0.11	U
50-32-8	Benzo (a) pyrene	0.11	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.11	U
53-70-3	Dibenzo (a,h) anthracene	0.11	U
191-24-2	Benzo (g,h,i) perylene	0.11	U

8/15/08

2

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 850 (g/mL) mL Lab File ID: 0806032-02J4A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
91-20-3	Naphthalene	0.12 ~~0.043~~	~~JB~~	U BL
91-57-6	2-Methylnaphthalene	0.12	U	
208-96-8	Acenaphthylene	0.12	U	
83-32-9	Acenaphthene	0.12	U	
86-73-7	Fluorene	0.12	U	
87-86-5	Pentachlorophenol	0.24	U	
85-01-8	Phenanthrene	0.12	U	
120-12-7	Anthracene	0.12	U	
206-44-0	Fluoranthene	0.12 ~~0.020~~	~~J~~	U BL
129-00-0	Pyrene	0.12 ~~0.040~~	~~J~~	U BL
56-55-3	Benzo (a) anthracene	0.12	U	
218-01-9	Chrysene	0.12 ~~0.021~~	~~J~~	U BL
205-99-2	Benzo (b) fluoranthene	0.12	U	
207-08-9	Benzo (k) fluoranthene	0.12	U	
50-32-8	Benzo (a) pyrene	0.12	U	
193-39-5	Indeno (1,2,3-cd) pyrene	0.12	U	
53-70-3	Dibenzo (a,h) anthracene	0.12	U	
191-24-2	Benzo (g,h,i) perylene	0.12	~~J~~	UJ CCH

SOM01.2 (8/2007)

8/15/08

3

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-03J2A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

use reanalysis

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.10	U
91-57-6	2-Methylnaphthalene	0.10	U
208-96-8	Acenaphthylene	0.10	U
83-32-9	Acenaphthene	0.10	U
86-73-7	Fluorene	0.10	U
87-86-5	Pentachlorophenol	0.20	U
85-01-8	Phenanthrene	0.10	U
120-12-7	Anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
129-00-0	Pyrene	0.10	U
56-55-3	Benzo (a) anthracene	0.10	U
218-01-9	Chrysene	0.10	U
205-99-2	Benzo (b) fluoranthene	0.10	U
207-08-9	Benzo (k) fluoranthene	0.10	U
50-32-8	Benzo (a) pyrene	0.10	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.10	U
53-70-3	Dibenzo (a,h) anthracene	0.10	U
191-24-2	Benzo (g,h,i) perylene	0.10	U

UJ SSL

UJ CCH

SOM01.2 (8/2007)

lw 8/15/08

3RE

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08BRE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03RE2

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-03J4A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/09/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.10	U
91-57-6	2-Methylnaphthalene	0.10	U
208-96-8	Acenaphthylene	0.10	U
83-32-9	Acenaphthene	0.10	U
86-73-7	Fluorene	0.10	U
87-86-5	Pentachlorophenol	0.20	U
85-01-8	Phenanthrene	0.10	U
120-12-7	Anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
129-00-0	Pyrene	0.10	U
56-55-3	Benzo (a) anthracene	0.10	U
218-01-9	Chrysene	0.10	U
205-99-2	Benzo (b) fluoranthene	0.10	U
207-08-9	Benzo (k) fluoranthene	0.10	U
50-32-8	Benzo (a) pyrene	0.10	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.10	U
53-70-3	Dibenzo (a,h) anthracene	0.10	U
191-24-2	Benzo (g,h,i) perylene	0.10	U

UJ SSL

SOM01.2 (8/2007)

8/15/08

4

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 0806032-04J2A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

use reanalysis

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.095 ~~0.041~~	~~JB~~
91-57-6	2-Methylnaphthalene	0.095	U
208-96-8	Acenaphthylene	0.095	U
83-32-9	Acenaphthene	0.095	U
86-73-7	Fluorene	0.095	U
87-86-5	Pentachlorophenol	0.19	U
85-01-8	Phenanthrene	0.095	U
120-12-7	Anthracene	0.095	U
206-44-0	Fluoranthene	0.016	J
129-00-0	Pyrene	~~0.095~~	~~U~~
56-55-3	Benzo (a) anthracene	0.017	J
218-01-9	Chrysene	0.018	J
205-99-2	Benzo (b) fluoranthene	0.095	U
207-08-9	Benzo (k) fluoranthene	0.095	U
50-32-8	Benzo (a) pyrene	0.095	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.095	U
53-70-3	Dibenzo (a,h) anthracene	0.095	U
191-24-2	Benzo (g,h,i) perylene	0.095	~~U~~

u BL

use →

UJ CCH

SOM01.2 (8/2007)

LW 8/15/08

4RE

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008RE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04RE2

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 0806032-04J3A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/09/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.095 ~~0.037~~	~~JB~~ U BL
91-57-6	2-Methylnaphthalene	0.095	U
208-96-8	Acenaphthylene	0.095	U
83-32-9	Acenaphthene	0.095	U
86-73-7	Fluorene	0.095	U
87-86-5	Pentachlorophenol	0.19	U
85-01-8	Phenanthrene	0.095	U
120-12-7	Anthracene	0.095	U
206-44-0	Fluoranthene	~~0.095~~ 0.016	~~U~~ J
129-00-0	Pyrene	0.020	J
56-55-3	Benzo (a) anthracene	0.015	J
218-01-9	Chrysene	0.016	J
205-99-2	Benzo (b) fluoranthene	0.095	U
207-08-9	Benzo (k) fluoranthene	0.095	U
50-32-8	Benzo (a) pyrene	0.095	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.095	U
53-70-3	Dibenzo (a,h) anthracene	0.095	U
191-24-2	Benzo (g,h,i) perylene	0.095	U

SOM01.2 (8/2007)

LW 8/15/08

5

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 0806032-06J2A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

Use reanalysis

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.098 ~~0.043~~	~~JB~~
91-57-6	2-Methylnaphthalene	0.098	U
208-96-8	Acenaphthylene	0.098	U
83-32-9	Acenaphthene	0.15	
86-73-7	Fluorene	0.098	U
87-86-5	Pentachlorophenol	0.71	
85-01-8	Phenanthrene	0.098	U
120-12-7	Anthracene	0.098	U
206-44-0	Fluoranthene	0.098	U
129-00-0	Pyrene	0.31	
56-55-3	Benzo (a) anthracene	0.098	U
218-01-9	Chrysene	0.098	U
205-99-2	Benzo (b) fluoranthene	0.098	U
207-08-9	Benzo (k) fluoranthene	0.098	U
50-32-8	Benzo (a) pyrene	0.098	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.098	U
53-70-3	Dibenzo (a,h) anthracene	0.098	U
191-24-2	Benzo (g,h,i) perylene	0.098	~~U~~

U BL

U J CCH

SOM01.2 (8/2007)

lw 8/15/08

5RE

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01-06112008RE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06RE2

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 0806032-06J3A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/09/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.098 ~~0.038~~	~~JB~~ U BL
91-57-6	2-Methylnaphthalene	0.12	
208-96-8	Acenaphthylene	0.098	U
83-32-9	Acenaphthene	0.14	
86-73-7	Fluorene	0.098	U
87-86-5	Pentachlorophenol	0.22	
85-01-8	Phenanthrene	0.098	U
120-12-7	Anthracene	0.098	U
206-44-0	Fluoranthene	0.098	U
129-00-0	Pyrene	0.30	
56-55-3	Benzo (a) anthracene	0.098	U
218-01-9	Chrysene	0.098	U
205-99-2	Benzo (b) fluoranthene	0.098	U
207-08-9	Benzo (k) fluoranthene	0.098	U
50-32-8	Benzo (a) pyrene	0.098	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.098	U
53-70-3	Dibenzo (a,h) anthracene	0.098	U
191-24-2	Benzo (g,h,i) perylene	0.098	U

SOM01.2 (8/2007)

8/15/08

6

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-07J2A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/08/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

use reanalysis

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.10 ~~0.054~~	~~JB~~
91-57-6	2-Methylnaphthalene	0.10	U
208-96-8	Acenaphthylene	0.10	U
83-32-9	Acenaphthene	0.10	U
86-73-7	Fluorene	0.10	U
87-86-5	Pentachlorophenol	0.20	U
85-01-8	Phenanthrene	0.10	U
120-12-7	Anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
129-00-0	Pyrene	0.10	U
56-55-3	Benzo (a) anthracene	0.10	U
218-01-9	Chrysene	0.10	U
205-99-2	Benzo (b) fluoranthene	0.10	U
207-08-9	Benzo (k) fluoranthene	0.10	U
50-32-8	Benzo (a) pyrene	0.10	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.10	U
53-70-3	Dibenzo (a,h) anthracene	0.10	U
191-24-2	Benzo (g,h,i) perylene	0.10	~~U~~

u BL

UJ CCH

SOM01.2 (8/2007)

8/15/08

6RE

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06112008RE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07RE2

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-07J3A62.d

Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 07/09/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
91-20-3	Naphthalene	0.10 ~~0.053~~	~~UB~~ U BL
91-57-6	2-Methylnaphthalene	0.10	U
208-96-8	Acenaphthylene	0.10	U
83-32-9	Acenaphthene	0.10	U
86-73-7	Fluorene	0.10	U
87-86-5	Pentachlorophenol	0.20	U
85-01-8	Phenanthrene	0.10	U
120-12-7	Anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
129-00-0	Pyrene	0.10	U
56-55-3	Benzo (a) anthracene	0.10	U
218-01-9	Chrysene	0.10	U
205-99-2	Benzo (b) fluoranthene	0.10	U
207-08-9	Benzo (k) fluoranthene	0.10	U
50-32-8	Benzo (a) pyrene	0.10	U
193-39-5	Indeno (1,2,3-cd) pyrene	0.10	U
53-70-3	Dibenzo (a,h) anthracene	0.10	U
191-24-2	Benzo (g,h,i) perylene	0.10	U

SOM01.2 (8/2007)

DW 8/15/08

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15560

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW01-08B	0806032-01	Water
1MS	IR86-SW01-08BMS	0806032-01MS	Water
1MSD	IR86-SW01-08BMSD	0806032-01MSD	Water
2	IR86-SW02-08B	0806032-02	Water
3	IR86-SW02D-08B	0806032-03	Water
4	IR86-FB06112008	0806032-04	Water
5	IR86-EB01-06112008	0806032-05	Water
6	IR86-EB02-06112008	0806032-06	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	None	ND	-	-	-
IR86-EB01-06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW02-08B ug/L	IR86-SW02D-08B ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - No discrepancies were identified.

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 900 (g/mL) mL Lab File ID: 062m0806032-01.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.056	U
319-85-7	beta-BHC	0.056	U
319-86-8	delta-BHC	0.056	U
58-89-9	gamma-BHC (Lindane)	0.056	U
76-44-8	Heptachlor	0.056	U
309-00-2	Aldrin	0.056	U
1024-57-3	Heptachlor epoxide	0.056	U
959-98-8	Endosulfan I	0.056	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.56	U
53494-70-5	Endrin ketone	0.11	U
7421-93-4	Endrin aldehyde	0.11	U
5103-71-9	alpha-Chlordane	0.056	U
5103-74-2	gamma-Chlordane	0.056	U
8001-35-2	Toxaphene	5.6	U

lw 8/15/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 975 (g/mL) mL Lab File ID: 063m0806032-02.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.051	U
319-85-7	beta-BHC	0.051	U
319-86-8	delta-BHC	0.051	U
58-89-9	gamma-BHC (Lindane)	0.051	U
76-44-8	Heptachlor	0.051	U
309-00-2	Aldrin	0.051	U
1024-57-3	Heptachlor epoxide	0.051	U
959-98-8	Endosulfan I	0.051	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.51	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.051	U
5103-74-2	gamma-Chlordane	0.051	U
8001-35-2	Toxaphene	5.1	U

chs 8/15/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 900 (g/mL) mL Lab File ID: 064m0806032-03.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.056	U
319-85-7	beta-BHC	0.056	U
319-86-8	delta-BHC	0.056	U
58-89-9	gamma-BHC (Lindane)	0.056	U
76-44-8	Heptachlor	0.056	U
309-00-2	Aldrin	0.056	U
1024-57-3	Heptachlor epoxide	0.056	U
959-98-8	Endosulfan I	0.056	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.56	U
53494-70-5	Endrin ketone	0.11	U
7421-93-4	Endrin aldehyde	0.11	U
5103-71-9	alpha-Chlordane	0.056	U
5103-74-2	gamma-Chlordane	0.056	U
8001-35-2	Toxaphene	5.6	U

lw
8/15/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 065m0806032-04.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.048	U
319-85-7	beta-BHC	0.048	U
319-86-8	delta-BHC	0.048	U
58-89-9	gamma-BHC (Lindane)	0.048	U
76-44-8	Heptachlor	0.048	U
309-00-2	Aldrin	0.048	U
1024-57-3	Heptachlor epoxide	0.048	U
959-98-8	Endosulfan I	0.048	U
60-57-1	Dieldrin	0.095	U
72-55-9	4,4'-DDE	0.095	U
72-20-8	Endrin	0.095	U
33213-65-9	Endosulfan II	0.095	U
72-54-8	4,4'-DDD	0.095	U
1031-07-8	Endosulfan sulfate	0.095	U
50-29-3	4,4'-DDT	0.095	U
72-43-5	Methoxychlor	0.48	U
53494-70-5	Endrin ketone	0.095	U
7421-93-4	Endrin aldehyde	0.095	U
5103-71-9	alpha-Chlordane	0.048	U
5103-74-2	gamma-Chlordane	0.048	U
8001-35-2	Toxaphene	4.8	U

MW 8/15/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 066m0806032-06.d

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

lw
8/15/08

6

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 975 (g/mL) mL Lab File ID: 067m0806032-07.d

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/19/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
319-84-6	alpha-BHC	0.051	U
319-85-7	beta-BHC	0.051	U
319-86-8	delta-BHC	0.051	U
58-89-9	gamma-BHC (Lindane)	0.051	U
76-44-8	Heptachlor	0.051	U
309-00-2	Aldrin	0.051	U
1024-57-3	Heptachlor epoxide	0.051	U
959-98-8	Endosulfan I	0.051	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.51	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.051	U
5103-74-2	gamma-Chlordane	0.051	U
8001-35-2	Toxaphene	5.1	U

LW 8/15/08

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 900 (g/mL) mL Lab File ID: 062v0806032-01.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	1.1	U
11104-28-2	AR1221	1.1	U
11141-16-5	AR1232	1.1	U
53469-21-9	AR1242	1.1	U
12672-29-6	AR1248	1.1	U
11097-69-1	AR1254	1.1	U
11096-82-5	AR1260	1.1	U
37324-23-5	AR1262	1.1	U
11100-14-4	AR1268	1.1	U

lw 8/15/08

2

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 063v0806032-02.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	1.0	U
11104-28-2	AR1221	1.0	U
11141-16-5	AR1232	1.0	U
53469-21-9	AR1242	1.0	U
12672-29-6	AR1248	1.0	U
11097-69-1	AR1254	1.0	U
11096-82-5	AR1260	1.0	U
37324-23-5	AR1262	1.0	U
11100-14-4	AR1268	1.0	U

LW 8/15/08

3

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 975 (g/mL) mL Lab File ID: 064v0806032-03.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	1.0	U
11104-28-2	AR1221	1.0	U
11141-16-5	AR1232	1.0	U
53469-21-9	AR1242	1.0	U
12672-29-6	AR1248	1.0	U
11097-69-1	AR1254	1.0	U
11096-82-5	AR1260	1.0	U
37324-23-5	AR1262	1.0	U
11100-14-4	AR1268	1.0	U

lw 8/15/08

4

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 065v0806032-04.d

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	1.0	U
11104-28-2	AR1221	1.0	U
11141-16-5	AR1232	1.0	U
53469-21-9	AR1242	1.0	U
12672-29-6	AR1248	1.0	U
11097-69-1	AR1254	1.0	U
11096-82-5	AR1260	1.0	U
37324-23-5	AR1262	1.0	U
11100-14-4	AR1268	1.0	U

lw 8/15/08

5

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 066v0806032-06.d

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	0.98	U
11104-28-2	AR1221	0.98	U
11141-16-5	AR1232	0.98	U
53469-21-9	AR1242	0.98	U
12672-29-6	AR1248	0.98	U
11097-69-1	AR1254	0.98	U
11096-82-5	AR1260	0.98	U
37324-23-5	AR1262	0.98	U
11100-14-4	AR1268	0.98	U

lw 8/15/08

6

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 900 (g/mL) mL Lab File ID: 067v0806032-07.d

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Extraction: (Type) SEPF Date Extracted: 06/16/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/18/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Sulfur Cleanup: (Y/N) N

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
12674-11-2	AR1016	1.1	U
11104-28-2	AR1221	1.1	U
11141-16-5	AR1232	1.1	U
53469-21-9	AR1242	1.1	U
12672-29-6	AR1248	1.1	U
11097-69-1	AR1254	1.1	U
11096-82-5	AR1260	1.1	U
37324-23-5	AR1262	1.1	U
11100-14-4	AR1268	1.1	U

lw
8/15/08

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15560

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW01-08B	0806032-01	Water
1MS	IR86-SW01-08BMS	0806032-01MS	Water
1MSD	IR86-SW01-08BMSD	0806032-01MSD	Water
2	IR86-SW02-08B	0806032-02	Water
3	IR86-SW02D-08B	0806032-03	Water
4	IR86-FB06112008	0806032-04	Water
5	IR86-EB01-06112008	0806032-05	Water
6	IR86-EB02-06112008	0806032-06	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
06/28/08	Carbazole	30.7%	None	All ND

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	4-Nitrophenol	92%/83%/Ok	None - All ND

Laboratory Control Sample - LCS samples were not included in this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	None	ND	-	-	-
IR86-EB01-06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW02-08B ug/L	IR86-SW02D-08B ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (NJ) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation - No discrepancies were identified.

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 925 (g/mL) mL Lab File ID: 0806032-01A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	5.4	U
108-95-2	Phenol	5.4	U
111-44-4	Bis(2-chloroethyl)ether	5.4	U
95-57-8	2-Chlorophenol	5.4	U
95-48-7	2-Methylphenol	5.4	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.4	U
98-86-2	Acetophenone	5.4	U
106-44-5	4-Methylphenol	5.4	U
621-64-7	N-Nitroso-di-n-propylamine	5.4	U
67-72-1	Hexachloroethane	5.4	U
98-95-3	Nitrobenzene	5.4	U
78-59-1	Isophorone	5.4	U
88-75-5	2-Nitrophenol	5.4	U
105-67-9	2,4-Dimethylphenol	5.4	U
111-91-1	Bis(2-chloroethoxy)methane	5.4	U
120-83-2	2,4-Dichlorophenol	5.4	U
91-20-3	Naphthalene	5.4	U
106-47-8	4-Chloroaniline	5.4	U
87-68-3	Hexachlorobutadiene	5.4	U
105-60-2	Caprolactam	5.4	U
59-50-7	4-Chloro-3-methylphenol	5.4	U
91-57-6	2-Methylnaphthalene	5.4	U
77-47-4	Hexachlorocyclopentadiene	5.4	U
88-06-2	2,4,6-Trichlorophenol	5.4	U
95-95-4	2,4,5-Trichlorophenol	5.4	U
92-52-4	1,1'-Biphenyl	5.4	U
91-58-7	2-Chloronaphthalene	5.4	U
88-74-4	2-Nitroaniline	11	U
131-11-3	Dimethylphthalate	5.4	U
606-20-2	2,6-Dinitrotoluene	5.4	U
208-96-8	Acenaphthylene	5.4	U
99-09-2	3-Nitroaniline	11	U
83-32-9	Acenaphthene	5.4	U

lw
8/15/08

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 925 (g/mL) mL Lab File ID: 0806032-01A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	11	U
100-02-7	4-Nitrophenol	11	U
132-64-9	Dibenzofuran	5.4	U
121-14-2	2,4-Dinitrotoluene	5.4	U
84-66-2	Diethylphthalate	5.4	U
86-73-7	Fluorene	5.4	U
7005-72-3	4-Chlorophenyl-phenylether	5.4	U
100-01-6	4-Nitroaniline	11	U
534-52-1	4,6-Dinitro-2-methylphenol	11	U
86-30-6	N-Nitrosodiphenylamine (1)	5.4	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.4	U
101-55-3	4-Bromophenyl-phenylether	5.4	U
118-74-1	Hexachlorobenzene	5.4	U
1912-24-9	Atrazine	5.4	U
87-86-5	Pentachlorophenol	11	U
85-01-8	Phenanthrene	5.4	U
120-12-7	Anthracene	5.4	U
86-74-8	Carbazole	5.4	U
84-74-2	Di-n-butylphthalate	5.4	U
206-44-0	Fluoranthene	5.4	U
129-00-0	Pyrene	5.4	U
85-68-7	Butylbenzylphthalate	5.4	U
91-94-1	3,3'-Dichlorobenzidine	5.4	U
56-55-3	Benzo (a) anthracene	5.4	U
218-01-9	Chrysene	5.4	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.4	U
117-84-0	Di-n-octylphthalate	5.4	U
205-99-2	Benzo (b) fluoranthene	5.4	U
207-08-9	Benzo (k) fluoranthene	5.4	U
50-32-8	Benzo (a) pyrene	5.4	U
193-39-5	Indeno (1,2,3-cd) pyrene	5.4	U
53-70-3	Dibenzo (a,h) anthracene	5.4	U
191-24-2	Benzo (g,h,i) perylene	5.4	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.4	U

[1]Cannot be separated from Diphenylamine

JLW 8/15/08

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 925 (g/mL) mL Lab File ID: 0806032-01A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01	57-10-3	n-Hexadecanoic acid	22.69	6.9	~~JN~~	JN
02		UNKNOWN	27.83	3.0	~~J~~	J
03		UNKNOWN	28.06	2.3	~~J~~	J
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[2]	Total Alkanes	N/A	2.3		

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

LW 8/15/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 850 (g/mL) mL Lab File ID: 0806032-02A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	5.9	U
108-95-2	Phenol	5.9	U
111-44-4	Bis(2-chloroethyl)ether	5.9	U
95-57-8	2-Chlorophenol	5.9	U
95-48-7	2-Methylphenol	5.9	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.9	U
98-86-2	Acetophenone	5.9	U
106-44-5	4-Methylphenol	5.9	U
621-64-7	N-Nitroso-di-n-propylamine	5.9	U
67-72-1	Hexachloroethane	5.9	U
98-95-3	Nitrobenzene	5.9	U
78-59-1	Isophorone	5.9	U
88-75-5	2-Nitrophenol	5.9	U
105-67-9	2,4-Dimethylphenol	5.9	U
111-91-1	Bis(2-chloroethoxy)methane	5.9	U
120-83-2	2,4-Dichlorophenol	5.9	U
91-20-3	Naphthalene	5.9	U
106-47-8	4-Chloroaniline	5.9	U
87-68-3	Hexachlorobutadiene	5.9	U
105-60-2	Caprolactam	5.9	U
59-50-7	4-Chloro-3-methylphenol	5.9	U
91-57-6	2-Methylnaphthalene	5.9	U
77-47-4	Hexachlorocyclopentadiene	5.9	U
88-06-2	2,4,6-Trichlorophenol	5.9	U
95-95-4	2,4,5-Trichlorophenol	5.9	U
92-52-4	1,1'-Biphenyl	5.9	U
91-58-7	2-Chloronaphthalene	5.9	U
88-74-4	2-Nitroaniline	12	U
131-11-3	Dimethylphthalate	5.9	U
606-20-2	2,6-Dinitrotoluene	5.9	U
208-96-8	Acenaphthylene	5.9	U
99-09-2	3-Nitroaniline	12	U
83-32-9	Acenaphthene	5.9	U

JW 8/15/08

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 850 (g/mL) mL Lab File ID: 0806032-02A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	12	U
100-02-7	4-Nitrophenol	12	U
132-64-9	Dibenzofuran	5.9	U
121-14-2	2,4-Dinitrotoluene	5.9	U
84-66-2	Diethylphthalate	5.9	U
86-73-7	Fluorene	5.9	U
7005-72-3	4-Chlorophenyl-phenylether	5.9	U
100-01-6	4-Nitroaniline	12	U
534-52-1	4,6-Dinitro-2-methylphenol	12	U
86-30-6	N-Nitrosodiphenylamine (1)	5.9	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.9	U
101-55-3	4-Bromophenyl-phenylether	5.9	U
118-74-1	Hexachlorobenzene	5.9	U
1912-24-9	Atrazine	5.9	U
87-86-5	Pentachlorophenol	12	U
85-01-8	Phenanthrene	5.9	U
120-12-7	Anthracene	5.9	U
86-74-8	Carbazole	5.9	U
84-74-2	Di-n-butylphthalate	5.9	U
206-44-0	Fluoranthene	5.9	U
129-00-0	Pyrene	5.9	U
85-68-7	Butylbenzylphthalate	5.9	U
91-94-1	3,3'-Dichlorobenzidine	5.9	U
56-55-3	Benzo (a) anthracene	5.9	U
218-01-9	Chrysene	5.9	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.9	U
117-84-0	Di-n-octylphthalate	5.9	U
205-99-2	Benzo (b) fluoranthene	5.9	U
207-08-9	Benzo (k) fluoranthene	5.9	U
50-32-8	Benzo (a) pyrene	5.9	U
193-39-5	Indeno (1,2,3-cd) pyrene	5.9	U
53-70-3	Dibenzo (a,h) anthracene	5.9	U
191-24-2	Benzo (g,h,i) perylene	5.9	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.9	U

[1] Cannot be separated from Diphenylamine

8/15/08

2

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 850 (g/mL) mL Lab File ID: 0806032-02A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01	57-10-3	n-Hexadecanoic acid	22.68	4.5	~~JN~~	JN
02		UNKNOWN	27.92	4.2	~~J~~	J
03		UNKNOWN	28.06	8.9	~~J~~	J
04	57-88-5	Cholesterol $$ Cholest-5-en-3-ol (3.	30.71	3.0	~~JN~~	JN
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[2]	Total Alkanes	N/A	13		

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

lw 8/15/08

3

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: _____ SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-03A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

SOM01.2 (8/2007)

lw 8/15/08

3

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: _____ SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-03A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	U
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine (1)	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo (a) anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo (b) fluoranthene	5.0	U
207-08-9	Benzo (k) fluoranthene	5.0	U
50-32-8	Benzo (a) pyrene	5.0	U
193-39-5	Indeno (1,2,3-cd) pyrene	5.0	U
53-70-3	Dibenzo (a,h) anthracene	5.0	U
191-24-2	Benzo (g,h,i) perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

SOM01.2 (8/2007)

MW 8/15/08

3

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-03A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		UNKNOWN	28.05	4.8	~~J~~
02		UNKNOWN	28.30	4.1	~~J~~
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

lw
8/15/08

4

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: _____ SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 0806032-04A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	4.8	U
108-95-2	Phenol	4.8	U
111-44-4	Bis(2-chloroethyl)ether	4.8	U
95-57-8	2-Chlorophenol	4.8	U
95-48-7	2-Methylphenol	4.8	U
108-60-1	2,2'-Oxybis(1-chloropropane)	4.8	U
98-86-2	Acetophenone	4.8	U
106-44-5	4-Methylphenol	4.8	U
621-64-7	N-Nitroso-di-n-propylamine	4.8	U
67-72-1	Hexachloroethane	4.8	U
98-95-3	Nitrobenzene	4.8	U
78-59-1	Isophorone	4.8	U
88-75-5	2-Nitrophenol	4.8	U
105-67-9	2,4-Dimethylphenol	4.8	U
111-91-1	Bis(2-chloroethoxy)methane	4.8	U
120-83-2	2,4-Dichlorophenol	4.8	U
91-20-3	Naphthalene	4.8	U
106-47-8	4-Chloroaniline	4.8	U
87-68-3	Hexachlorobutadiene	4.8	U
105-60-2	Caprolactam	4.8	U
59-50-7	4-Chloro-3-methylphenol	4.8	U
91-57-6	2-Methylnaphthalene	4.8	U
77-47-4	Hexachlorocyclopentadiene	4.8	U
88-06-2	2,4,6-Trichlorophenol	4.8	U
95-95-4	2,4,5-Trichlorophenol	4.8	U
92-52-4	1,1'-Biphenyl	4.8	U
91-58-7	2-Chloronaphthalene	4.8	U
88-74-4	2-Nitroaniline	9.5	U
131-11-3	Dimethylphthalate	4.8	U
606-20-2	2,6-Dinitrotoluene	4.8	U
208-96-8	Acenaphthylene	4.8	U
99-09-2	3-Nitroaniline	9.5	U
83-32-9	Acenaphthene	4.8	U

SOM01.2 (8/2007)

lw 8/15/08

4

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 0806032-04A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	9.5	U
100-02-7	4-Nitrophenol	9.5	U
132-64-9	Dibenzofuran	4.8	U
121-14-2	2,4-Dinitrotoluene	4.8	U
84-66-2	Diethylphthalate	4.8	U
86-73-7	Fluorene	4.8	U
7005-72-3	4-Chlorophenyl-phenylether	4.8	U
100-01-6	4-Nitroaniline	9.5	U
534-52-1	4,6-Dinitro-2-methylphenol	9.5	U
86-30-6	N-Nitrosodiphenylamine (1)	4.8	U
95-94-3	1,2,4,5-Tetrachlorobenzene	4.8	U
101-55-3	4-Bromophenyl-phenylether	4.8	U
118-74-1	Hexachlorobenzene	4.8	U
1912-24-9	Atrazine	4.8	U
87-86-5	Pentachlorophenol	9.5	U
85-01-8	Phenanthrene	4.8	U
120-12-7	Anthracene	4.8	U
86-74-8	Carbazole	4.8	U
84-74-2	Di-n-butylphthalate	4.8	U
206-44-0	Fluoranthene	4.8	U
129-00-0	Pyrene	4.8	U
85-68-7	Butylbenzylphthalate	4.8	U
91-94-1	3,3'-Dichlorobenzidine	4.8	U
56-55-3	Benzo (a) anthracene	4.8	U
218-01-9	Chrysene	4.8	U
117-81-7	Bis(2-ethylhexyl)phthalate	4.8	U
117-84-0	Di-n-octylphthalate	4.8	U
205-99-2	Benzo (b) fluoranthene	4.8	U
207-08-9	Benzo (k) fluoranthene	4.8	U
50-32-8	Benzo (a) pyrene	4.8	U
193-39-5	Indeno (1,2,3-cd) pyrene	4.8	U
53-70-3	Dibenzo (a,h) anthracene	4.8	U
191-24-2	Benzo (g,h,i) perylene	4.8	U
58-90-2	2,3,4,6-Tetrachlorophenol	4.8	U

[1]Cannot be separated from Diphenylamine

SOM01.2 (8/2007)

MW 8/15/08

4

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 1050 (g/mL) mL Lab File ID: 0806032-04A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/12/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	0-00-0	7,9-Di-tert-butyl-1-oxaspiro(4,5)dec	22.42	3.7	~~JN~~ JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

lw 8/15/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 0806032-06A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	4.9	U
108-95-2	Phenol	4.9	U
111-44-4	Bis(2-chloroethyl)ether	4.9	U
95-57-8	2-Chlorophenol	4.9	U
95-48-7	2-Methylphenol	4.9	U
108-60-1	2,2'-Oxybis(1-chloropropane)	4.9	U
98-86-2	Acetophenone	4.9	U
106-44-5	4-Methylphenol	4.9	U
621-64-7	N-Nitroso-di-n-propylamine	4.9	U
67-72-1	Hexachloroethane	4.9	U
98-95-3	Nitrobenzene	4.9	U
78-59-1	Isophorone	4.9	U
88-75-5	2-Nitrophenol	4.9	U
105-67-9	2,4-Dimethylphenol	4.9	U
111-91-1	Bis(2-chloroethoxy)methane	4.9	U
120-83-2	2,4-Dichlorophenol	4.9	U
91-20-3	Naphthalene	4.9	U
106-47-8	4-Chloroaniline	4.9	U
87-68-3	Hexachlorobutadiene	4.9	U
105-60-2	Caprolactam	4.9	U
59-50-7	4-Chloro-3-methylphenol	4.9	U
91-57-6	2-Methylnaphthalene	4.9	U
77-47-4	Hexachlorocyclopentadiene	4.9	U
88-06-2	2,4,6-Trichlorophenol	4.9	U
95-95-4	2,4,5-Trichlorophenol	4.9	U
92-52-4	1,1'-Biphenyl	4.9	U
91-58-7	2-Chloronaphthalene	4.9	U
88-74-4	2-Nitroaniline	9.8	U
131-11-3	Dimethylphthalate	4.9	U
606-20-2	2,6-Dinitrotoluene	4.9	U
208-96-8	Acenaphthylene	4.9	U
99-09-2	3-Nitroaniline	9.8	U
83-32-9	Acenaphthene	4.9	U

MW 8/15/08

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 0806032-06A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	9.8	U
100-02-7	4-Nitrophenol	9.8	U
132-64-9	Dibenzofuran	4.9	U
121-14-2	2,4-Dinitrotoluene	4.9	U
84-66-2	Diethylphthalate	4.9	U
86-73-7	Fluorene	4.9	U
7005-72-3	4-Chlorophenyl-phenylether	4.9	U
100-01-6	4-Nitroaniline	9.8	U
534-52-1	4,6-Dinitro-2-methylphenol	9.8	U
86-30-6	N-Nitrosodiphenylamine (1)	4.9	U
95-94-3	1,2,4,5-Tetrachlorobenzene	4.9	U
101-55-3	4-Bromophenyl-phenylether	4.9	U
118-74-1	Hexachlorobenzene	4.9	U
1912-24-9	Atrazine	4.9	U
87-86-5	Pentachlorophenol	9.8	U
85-01-8	Phenanthrene	4.9	U
120-12-7	Anthracene	4.9	U
86-74-8	Carbazole	4.9	U
84-74-2	Di-n-butylphthalate	4.9	U
206-44-0	Fluoranthene	4.9	U
129-00-0	Pyrene	4.9	U
85-68-7	Butylbenzylphthalate	4.9	U
91-94-1	3,3'-Dichlorobenzidine	4.9	U
56-55-3	Benzo (a) anthracene	4.9	U
218-01-9	Chrysene	4.9	U
117-81-7	Bis(2-ethylhexyl)phthalate	4.9	U
117-84-0	Di-n-octylphthalate	4.9	U
205-99-2	Benzo (b) fluoranthene	4.9	U
207-08-9	Benzo (k) fluoranthene	4.9	U
50-32-8	Benzo (a) pyrene	4.9	U
193-39-5	Indeno (1,2,3-cd) pyrene	4.9	U
53-70-3	Dibenzo (a,h) anthracene	4.9	U
191-24-2	Benzo (g,h,i) perylene	4.9	U
58-90-2	2,3,4,6-Tetrachlorophenol	4.9	U

[1]Cannot be separated from Diphenylamine

lw
8/15/08

5

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB01-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 1030 (g/mL) mL Lab File ID: 0806032-06A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01	121-33-5	Vanillin	17.26	2.6	~~JN~~	JN
02	0-00-0	7,9-Di-tert-butyl-1-oxaspiro(4,5)dec	22.42	5.6	~~JN~~	JN
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[2]	Total Alkanes	N/A			

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

lw 8/15/08

4

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-07A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	1.4	J
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

SOM01.2 (8/2007)

AW 8/15/08

6

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-07A62.d

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	U
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine (1)	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo (a) anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo (b) fluoranthene	5.0	U
207-08-9	Benzo (k) fluoranthene	5.0	U
50-32-8	Benzo (a) pyrene	5.0	U
193-39-5	Indeno (1,2,3-cd) pyrene	5.0	U
53-70-3	Dibenzo (a,h) anthracene	5.0	U
191-24-2	Benzo (g,h,i) perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

8/15/08

6

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB02-06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 0806032-07A62.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: Decanted: (Y/N) Date Received: 06/13/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/16/2008

Injection Volume: 2.0 (uL) GPC Factor: 1.0 Date Analyzed: 06/29/2008

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01	121-33-5	Vanillin	17.26	2.1	~~JN~~	JN
02	6738-27-8	2,5-Cyclohexadien-1-one, 2,6-bis(1,1	22.42	5.0	~~JN~~	JN
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[2]	Total Alkanes	N/A			

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

hw 8/15/08

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15560

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW01-08B	0806032-01	Water
1MS	IR86-SW01-08BMS	0806032-01MS	Water
1MSD	IR86-SW01-08BMSD	0806032-01MSD	Water
2	IR86-SW02-08B	0806032-02	Water
3	IR86-SW02D-08B	0806032-03	Water
4	IR86-FB06112008	0806032-04	Water
5	IR86-EB01-06112008	0806032-05	Water
6	IR86-EB02-06112008	0806032-06	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, USEPA "Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June 2001 and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
3	Chloroethane-d5	132%	None - All associated ND

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - LCS samples were not included in this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
VBLKHM	Methylene chloride	0.31	3.1	U	1-6

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	Acetone	12	120	U	1-3, 6
	2-Butanone	2.4	24	U	6
	Toluene	0.14	0.70	U	1, 3, 6
IR86-EB01-06112008	2-Butanone	6.9	69	None	All ND or already qualified
IR86-TB06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW02-08B ug/L	IR86-SW02D-08B ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (JN) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation - No discrepancies were identified.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	6.2		u BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.54	~~B~~	u BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lwo 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0171.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.11~~	~~J~~ U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lw 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-01

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0171.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	7446-09-5	Sulfur dioxide $$ Fermenicide powde	4.17	2.7	~~JN~~
02		Unknown	6.78	1.3	~~J~~
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

JN
J

[1]EPA-designated Registry Number.

8/15/08

2

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	9.4		U BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.61	~~B~~	U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

MW
8/15/08

2

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0271.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

KCW 8/15/08

2

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-02

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0271.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	7446-09-5	Sulfur dioxide $$ Fermenicide powde	4.19	0.69	~~J~~N
02		Unknown	6.78	1.3	~~J~~
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

JN
J

[1]EPA-designated Registry Number.

LW
8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	6.5	u BL
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.53	~~B~~ u BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

LCW 8/15/08

3

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0371.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.11~~	~~J~~ U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

lcW 8/15/08

3

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SW02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-03

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0371.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	15.79	1.6	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

LW
8/15/08

4

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	12	
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	2.5	~~B~~ U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	2.4	J
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

8/15/08

4

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0471.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.14	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

kw
8/15/08

4

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-FB06112008

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-04

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0471.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/12/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		UNKNOWN	6.19	1.5	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

RW
8/15/08

5

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0671.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	8.9		u BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.54	~~B~~	u BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	6.9		
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw
8/15/08

5

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB01061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0671.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.13~~	~~J~~ U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LW 8/15/08

5

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB01061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-06

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0671.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.77	1.1	~~J~~ J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

LCW
8/15/08

6

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	13		U BL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	1.8	~~B~~	U BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0 ~~3.8~~	~~J~~	U BL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

Report 1,4-Dioxane for Low-Medium VOA analysis only

lus 8/15/08

6

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-EB02061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0771.d

Level: (TRACE/LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50 ~~0.10~~	~~J~~ U BL
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

QW 8/15/08

6

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-EB02061108

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806032 Mod. Ref No.: SDG No.: 15560

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 0806032-07

Sample wt/vol: 25.0 (g/mL) mL Lab File ID: 0806032-0771.d

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2008

% Moisture: not dec. Date Analyzed: 06/16/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.19	1.8	~~J~~ J
02		Unknown	6.78	0.96	~~J~~ J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

lcw 8/15/08

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15561

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD01-08B	1556101	Soil
1MS	IR86-SD01-08BMS	1556101MS	Soil
1MSD	IR86-SD01-08BMSD	1556101MSD	Soil
2	IR86-SD02-08B	1556102	Soil
3	IR86-SD02D-08B	1556103	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. ug/L	Qualifier	Affected Samples
Beryllium	0.517	U	1-3
Calcium	44.889	U	1
Sodium	55.347	U	1-3
Magnesium	39.075	U	1-3
Nickel	0.940	U	1-3

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
IR86-FB06112008 (SDG 15560)	Sodium	211	None	Already qualified due to MB
IR86-EB01-06112008 (SDG 15560)	None	ND	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike - The matrix spike samples exhibited acceptable %R values except the following.

MS Sample ID	Compound	%R	Qualifier	Affected Samples
1	Antimony	42%	J/UJ	All samples

Matrix Duplicate - The matrix duplicate samples exhibited acceptable RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values except the following.

ICP Sample ID	Compound	%D	Qualifier	Affected Samples
1	Barium	13%	J/UJ	All samples
	Potassium	12%	J/UJ	All samples

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD02-08B ug/L	IR86-SD02D-08B ug/L	RPD	Qualifier
Aluminum	3700	5320	36%	None
Antimony	10.3 U	1.3	NC	None
Arsenic	1.7	2.7	45%	None
Barium	12.5	18.2	37%	None
Cadmium	0.73	1.1	40%	None
Calcium	56100	56200	0%	None
Chromium	9.7	13.8	35%	None
Cobalt	0.59	0.93	45%	None
Copper	9.6	14.1	38%	None
Iron	4770	7150	40%	None
Lead	32.7	50.6	43%	None
Manganese	16.3	20.5	23%	None

Compound	IR86-SD02-08B ug/L	IR86-SD02D-08B ug/L	RPD	Qualifier
Potassium	224	292	26%	None
Vanadium	17.5	24.3	33%	None
Zinc	87.7	129	38%	None

Compound Quantitation - No discrepancies were identified.

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SD01-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15561

Matrix (soil/water): SOIL Lab Sample ID: 1556101

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 67.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	1570			P	
7440-36-0	Antimony	0.86	~~J~~	J ~~N~~	P	MSD
7440-38-2	Arsenic	1.1	J		P	
7440-39-3	Barium	4.7	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	0.74 ~~0.055~~	~~J~~	U	P	BL
7440-43-9	Cadmium	0.74	U		P	
7440-70-2	Calcium	736 550	J	U	P	BL
7440-47-3	Chromium	3.2			P	
7440-48-4	Cobalt	7.4	U		P	
7440-50-8	Copper	0.83	J		P	
7439-89-6	Iron	1690			P	
7439-92-1	Lead	2.6			P	
7439-95-4	Magnesium	736 ~~72.2~~	~~J~~	U	P	BL
7439-96-5	Manganese	5.6			P	
7439-97-6	Mercury	0.15	U		CV	
7440-02-0	Nickel	5.9 ~~0.77~~	~~J~~	U	P	BL
7440-09-7	Potassium	70.5	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	5.2	U		P	
7440-22-4	Silver	1.5	U		P	
7440-23-5	Sodium	736 ~~101~~	~~J~~	U	P	BL
7440-28-0	Thallium	3.7	U		P	
7440-62-2	Vanadium	5.7	J		P	
7440-66-6	Zinc	9.9			P	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

UW 8/15/08

2

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SD02-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15561

Matrix (soil/water): SOIL Lab Sample ID: 1556102

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 56.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3700			P	
7440-36-0	Antimony	10.3	~~U~~	UJ ~~N~~	P	MSL
7440-38-2	Arsenic	1.7	J		P	
7440-39-3	Barium	12.5	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	0.86 ~~0.14~~	~~J~~	U	P	BL
7440-43-9	Cadmium	0.73	J		P	
7440-70-2	Calcium	56100			P	
7440-47-3	Chromium	9.7			P	
7440-48-4	Cobalt	0.59	J		P	
7440-50-8	Copper	9.6			P	
7439-89-6	Iron	4770			P	
7439-92-1	Lead	32.7			P	
7439-95-4	Magnesium	967 ~~967~~		U	P	BL
7439-96-5	Manganese	16.3			P	
7439-97-6	Mercury	0.17	U		CV	
7440-02-0	Nickel	6.9 ~~5.2~~	J	U	P	BL
7440-09-7	Potassium	224	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	6.0	U		P	
7440-22-4	Silver	1.7	U		P	
7440-23-5	Sodium	962 ~~191~~	~~J~~	U	P	BL
7440-28-0	Thallium	4.3	U		P	
7440-62-2	Vanadium	17.5			P	
7440-66-6	Zinc	87.7			P	

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

LW 8/15/08

3

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SD02D-08B

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: NRAS No.: SDG NO.: 15561

Matrix (soil/water): SOIL Lab Sample ID: 1556103

Level (low/med): LOW Date Received: 06/12/2008

% Solids: 40.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5320			P	
7440-36-0	Antimony	1.3	~~J~~	J ~~N~~	P	MSL
7440-38-2	Arsenic	2.7			P	
7440-39-3	Barium	18.2	~~J~~	J ~~E~~	P	SD
7440-41-7	Beryllium	1.2 ~~0.19~~	~~J~~	U	P	BL
7440-43-9	Cadmium	1.1	J		P	
7440-70-2	Calcium	56200			P	
7440-47-3	Chromium	13.8			P	
7440-48-4	Cobalt	0.93	J		P	
7440-50-8	Copper	14.1			P	
7439-89-6	Iron	7150			P	
7439-92-1	Lead	50.6			P	
7439-95-4	Magnesium	1220 ~~1020~~	~~J~~	U	P	BL
7439-96-5	Manganese	20.5			P	
7439-97-6	Mercury	0.23	U		CV	
7440-02-0	Nickel	9.7 ~~7.4~~	~~J~~	U	P	BL
7440-09-7	Potassium	292	~~J~~	J ~~E~~	P	SD
7782-49-2	Selenium	8.5	U		P	
7440-22-4	Silver	2.4	U		P	
7440-23-5	Sodium	1220 ~~282~~	~~J~~	U	P	BL
7440-28-0	Thallium	6.1	U		P	
7440-62-2	Vanadium	24.3			P	
7440-66-6	Zinc	129			P	

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

LW 8/15/08

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDRCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15561

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD01-08B	0806033-01	Soil
1MS	IR86-SD01-08BMS	0806033-01MS	Soil
1MSD	IR86-SD01-08BMSD	0806033-01MSD	Soil
2	IR86-SD02-08B	0806033-02	Soil
3	IR86-SD02D-08B	0806033-03	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	PCP	126%/Ok/Ok	None - Sample ND

Laboratory Control Sample - LCS samples were not included in this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008RE	Fluoranthene	0.016	0.08	None	All ND or >5X
	Pyrene	0.020	0.10	None	All ND or >5X
	Benzo (a) anthracene	0.015	0.075	None	All ND or >5X
	Chrysene	0.016	0.08	None	All ND or >5X
IR86-EB01-06112008RE	2-Methylnaphthlene	0.12	0.60	None	All ND or >5X
	Acenaphthene	0.14	0.70	None	All ND or >5X
	PCP	0.22	1.1	None	All ND or >5X
	Pyrene	0.30	1.5	None	All ND or >5X

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD02-08B ug/kg	IR86-SD02D-08B ug/kg	RPD	Qualifier
Phenanthrene	10	13	26%	None
Anthracene	3.4	3.9	14%	None
Fluoranthene	36	62	53%	None
Pyrene	38	54	35%	None
Benzo (a) anthracene	15	15	0%	None
Chrysene	38	41	8%	None
Benzo (b) fluoranthene	34	38	11%	None
Benzo (k) fluoranthene	31	22	34%	None
Benzo (a) pyrene	19	16	17%	None
Indeno (1,2,3-cd) pyrene	29	25	15%	None
Dibenzo (a,h) anthracene	7.3 U	7.5	NC	None
Benzo (g,h,i) perylene	54	37	37%	None

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (JN) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation - No discrepancies were identified.

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806C33 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01RE1

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-01RA64.d

Extraction: (Type) SONC

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 07/14/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/17/2008

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
91-20-3	Naphthalene	4.6	U
91-57-6	2-Methylnaphthalene	4.6	U
208-96-8	Acenaphthylene	4.6	U
83-32-9	Acenaphthene	4.6	U
86-73-7	Fluorene	4.6	U
87-86-5	Pentachlorophenol	9.3	U
85-01-8	Phenanthrene	4.6	U
120-12-7	Anthracene	4.6	U
206-44-0	Fluoranthene	3.4	J
129-00-0	Pyrene	4.6	U
56-55-3	Benzo (a) anthracene	4.6	U
218-01-9	Chrysene	4.6	U
205-99-2	Benzo (b) fluoranthene	2.8	J
207-08-9	Benzo (k) fluoranthene	2.4	J
50-32-8	Benzo (a) pyrene	1.7	J
193-39-5	Indeno (1,2,3-cd) pyrene	1.9	J
53-70-3	Dibenzo (a,h) anthracene	4.6	U
191-24-2	Benzo (g,h,i) perylene	4.6	U

hw 8/15/08

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806C33 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02RE1

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-02RA64.d

Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 07/14/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/17/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
91-20-3	Naphthalene	7.3	U
91-57-6	2-Methylnaphthalene	7.3	U
208-96-8	Acenaphthylene	7.3	U
83-32-9	Acenaphthene	7.3	U
86-73-7	Fluorene	7.3	U
87-86-5	Pentachlorophenol	15	U
85-01-8	Phenanthrene	10	
120-12-7	Anthracene	3.4	J
206-44-0	Fluoranthene	36	
129-00-0	Pyrene	38	
56-55-3	Benzo (a) anthracene	15	
218-01-9	Chrysene	38	
205-99-2	Benzo (b) fluoranthene	34	
207-08-9	Benzo (k) fluoranthene	31	
50-32-8	Benzo (a) pyrene	19	
193-39-5	Indeno (1,2,3-cd) pyrene	29	
53-70-3	Dibenzo (a,h) anthracene	7.3	U
191-24-2	Benzo (g,h,i) perylene	54	

fcw 8/15/08

1F - FORM I SV-SIM
SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03RE1

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-03RA64.d

Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 07/14/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/17/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
91-20-3	Naphthalene	7.3	U
91-57-6	2-Methylnaphthalene	7.3	U
208-96-8	Acenaphthylene	7.3	U
83-32-9	Acenaphthene	7.3	U
86-73-7	Fluorene	7.3	U
87-86-5	Pentachlorophenol	15	U
85-01-8	Phenanthrene	13	
120-12-7	Anthracene	3.9	J
206-44-0	Fluoranthene	62	
129-00-0	Pyrene	54	
56-55-3	Benzo (a) anthracene	15	
218-01-9	Chrysene	41	
205-99-2	Benzo (b) fluoranthene	38	
207-08-9	Benzo (k) fluoranthene	22	
50-32-8	Benzo (a) pyrene	16	
193-39-5	Indeno (1,2,3-cd) pyrene	25	
53-70-3	Dibenzo (a,h) anthracene	7.5	
191-24-2	Benzo (g,h,i) perylene	37	

JW 8/15/08

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15561

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD01-08B	0806033-01	Soil
1MS	IR86-SD01-08BMS	0806033-01MS	Soil
1MSD	IR86-SD01-08BMSD	0806033-01MSD	Soil
2	IR86-SD02-08B	0806033-02	Soil
3	IR86-SD02D-08B	0806033-03	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-06112008	None	ND	-	-	-
IR86-FB06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD02-008B ug/kg	IR86-SD02D-008B ug/kg	RPD	Qualifier
Heptachlor epoxide	1.6	2.0	22%	None
4,4'-DDE	47	45	4%	None
4,4'-DDD	16	15	6%	None
4,4'-DDT	30	8.5	112%	None
alpha-Chlordane	8.9	9.3	4%	None
gamma-Chlordane	8.6	8.5	1%	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - Several samples exhibited results with high %D values between columns and have been flagged (P) by the laboratory and further qualified (J).

Pesticide Cleanup Checks - The % recoveries were within the QC limits of 80-120% for the florisil cartridge cleanup and 80-110% for GPC.

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 226m0806033-01.d

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Extraction: (Type) SONC Date Extracted: 06/21/2008

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 06/24/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	1.3	~~JP~~ J 2C
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	1.6	J
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	0.86	~~JP~~ J 2C
8001-35-2	Toxaphene	240	U

MW
8/15/08

2

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 227m0806033-02.d

% Moisture: 55.0 Decanted: (Y/N) ~~N~~ Y Date Received: 06/12/2008

Extraction: (Type) SONC TAJ 7/8/08 Date Extracted: 06/21/2008

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 06/24/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
319-84-6	alpha-BHC	3.8	U	
319-85-7	beta-BHC	3.8	U	
319-86-8	delta-BHC	3.8	U	
58-89-9	gamma-BHC (Lindane)	3.8	U	
76-44-8	Heptachlor	3.8	U	
309-00-2	Aldrin	3.8	U	
1024-57-3	Heptachlor epoxide	1.6	~~JP~~	J 2C
959-98-8	Endosulfan I	3.8	U	
60-57-1	Dieldrin	7.3	U	
72-55-9	4,4'-DDE	47		
72-20-8	Endrin	7.3	U	
33213-65-9	Endosulfan II	7.3	U	
72-54-8	4,4'-DDD	16		
1031-07-8	Endosulfan sulfate	7.3	U	
50-29-3	4,4'-DDT	30		
72-43-5	Methoxychlor	38	U	
53494-70-5	Endrin ketone	7.3	U	
7421-93-4	Endrin aldehyde	7.3	U	
5103-71-9	alpha-Chlordane	8.9	~~P~~	J 2C
5103-74-2	gamma-Chlordane	8.6	~~P~~	J 2C
8001-35-2	Toxaphene	380	U	

MW 8/15/08

3

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 228m0806033-03.d

% Moisture: 55.0 Decanted: (Y/N) ~~N~~ Y Date Received: 06/12/2008

Extraction: (Type) SONC TAJ 7/8/08 Date Extracted: 06/21/2008

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 06/24/2008

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
319-84-6	alpha-BHC	3.8	U	
319-85-7	beta-BHC	3.8	U	
319-86-8	delta-BHC	3.8	U	
58-89-9	gamma-BHC (Lindane)	3.8	U	
76-44-8	Heptachlor	3.8	U	
309-00-2	Aldrin	3.8	U	
1024-57-3	Heptachlor epoxide	2.0	~~JP~~	J 2C
959-98-8	Endosulfan I	3.8	U	
60-57-1	Dieldrin	7.3	U	
72-55-9	4,4'-DDE	45		
72-20-8	Endrin	7.3	U	
33213-65-9	Endosulfan II	7.3	U	
72-54-8	4,4'-DDD	15		
1031-07-8	Endosulfan sulfate	7.3	U	
50-29-3	4,4'-DDT	8.5	~~P~~	J 2C
72-43-5	Methoxychlor	38	U	
53494-70-5	Endrin ketone	7.3	U	
7421-93-4	Endrin aldehyde	7.3	U	
5103-71-9	alpha-Chlordane	9.3		
5103-74-2	gamma-Chlordane	8.5	~~P~~	J 2C
8001-35-2	Toxaphene	380	U	

MW 8/15/08

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 045y0806033-01.d

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Extraction: (Type) SONC Date Extracted: 06/21/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.5 Sulfur Cleanup: (Y/N) Y

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
12674-11-2	AR1016	46	U
11104-28-2	AR1221	46	U
11141-16-5	AR1232	46	U
53469-21-9	AR1242	46	U
12672-29-6	AR1248	46	U
11097-69-1	AR1254	46	U
11096-82-5	AR1260	46	U
37324-23-5	AR1262	46	U
11100-14-4	AR1268	46	U

MW
8/15/08

3

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 047y0806033-03.d

% Moisture: 55.0 Decanted: (Y/N) ~~N~~ Y Date Received: 06/12/2008

Extraction: (Type) SONC TAJ 7/8/08 Date Extracted: 06/21/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) Y

ACID Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
12674-11-2	AR1016	73	U
11104-28-2	AR1221	73	U
11141-16-5	AR1232	73	U
53469-21-9	AR1242	73	U
12672-29-6	AR1248	73	U
11097-69-1	AR1254	73	U
11096-82-5	AR1260	73	U
37324-23-5	AR1262	73	U
11100-14-4	AR1268	73	U

lw 8/15/08

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15561

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD01-08B	0806033-01	Soil
1MS	IR86-SD01-08BMS	0806033-01MS	Soil
1MSD	IR86-SD01-08BMSD	0806033-01MSD	Soil
2	IR86-SD02-08B	0806033-02	Soil
3	IR86-SD02D-08B	0806033-03	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	None	ND	-	-	-
IR86-EB01-06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD02-08B ug/kg	IR86-SD02D-08B ug/kg	RPD	Qualifier
Benzaldehyde	86	380 U	NC	None
Phenol	63	380U	NC	None
Acetophenone	110	380U	NC	None
Bis (2-Ethylhexyl) phthalate	370	730	65%	None

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (JN) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation - No discrepancies were identified.

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-01A60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
100-52-7	Benzaldehyde	240	U
108-95-2	Phenol	240	U
111-44-4	Bis(2-chloroethyl)ether	240	U
95-57-8	2-Chlorophenol	240	U
95-48-7	2-Methylphenol	240	U
108-60-1	2,2'-Oxybis(1-chloropropane)	240	U
98-86-2	Acetophenone	240	U
106-44-5	4-Methylphenol	240	U
621-64-7	N-Nitroso-di-n-propylamine	240	U
67-72-1	Hexachloroethane	240	U
98-95-3	Nitrobenzene	240	U
78-59-1	Isophorone	240	U
88-75-5	2-Nitrophenol	240	U
105-67-9	2,4-Dimethylphenol	240	U
111-91-1	Bis(2-chloroethoxy)methane	240	U
120-83-2	2,4-Dichlorophenol	240	U
91-20-3	Naphthalene	240	U
106-47-8	4-Chloroaniline	240	U
87-68-3	Hexachlorobutadiene	240	U
105-60-2	Caprolactam	240	U
59-50-7	4-Chloro-3-methylphenol	240	U
91-57-6	2-Methylnaphthalene	240	U
77-47-4	Hexachlorocyclopentadiene	240	U
88-06-2	2,4,6-Trichlorophenol	240	U
95-95-4	2,4,5-Trichlorophenol	240	U
92-52-4	1,1'-Biphenyl	240	U
91-58-7	2-Chloronaphthalene	240	U
88-74-4	2-Nitroaniline	460	U
131-11-3	Dimethylphthalate	240	U
606-20-2	2,6-Dinitrotoluene	240	U
208-96-8	Acenaphthylene	240	U
99-09-2	3-Nitroaniline	460	U
83-32-9	Acenaphthene	240	U

lw 8/15/08

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-01A60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
51-28-5	2,4-Dinitrophenol	460	U
100-02-7	4-Nitrophenol	460	U
132-64-9	Dibenzofuran	240	U
121-14-2	2,4-Dinitrotoluene	240	U
84-66-2	Diethylphthalate	240	U
86-73-7	Fluorene	240	U
7005-72-3	4-Chlorophenyl-phenylether	240	U
100-01-6	4-Nitroaniline	460	U
534-52-1	4,6-Dinitro-2-methylphenol	460	U
86-30-6	N-Nitrosodiphenylamine (1)	240	U
95-94-3	1,2,4,5-Tetrachlorobenzene	240	U
101-55-3	4-Bromophenyl-phenylether	240	U
118-74-1	Hexachlorobenzene	240	U
1912-24-9	Atrazine	240	U
87-86-5	Pentachlorophenol	460	U
85-01-8	Phenanthrene	240	U
120-12-7	Anthracene	240	U
86-74-8	Carbazole	240	U
84-74-2	Di-n-butylphthalate	240	U
206-44-0	Fluoranthene	240	U
129-00-0	Pyrene	240	U
85-68-7	Butylbenzylphthalate	240	U
91-94-1	3,3'-Dichlorobenzidine	240	U
56-55-3	Benzo (a) anthracene	240	U
218-01-9	Chrysene	240	U
117-81-7	Bis(2-ethylhexyl)phthalate	230	J
117-84-0	Di-n-octylphthalate	240	U
205-99-2	Benzo (b) fluoranthene	240	U
207-08-9	Benzo (k) fluoranthene	240	U
50-32-8	Benzo (a) pyrene	240	U
193-39-5	Indeno (1,2,3-cd) pyrene	240	U
53-70-3	Dibenzo (a,h) anthracene	240	U
191-24-2	Benzo (g,h,i) perylene	240	U
58-90-2	2,3,4,6-Tetrachlorophenol	240	U

[1]Cannot be separated from Diphenylamine

JW 8/15/08

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-01A60.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 28.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.0

CONCENTRATION UNITS:(ug/L or ug/kg) ug/kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	57-10-3	n-Hexadecanoic acid	34.72	450	JN
02		UNKNOWN	40.12	400	J
03	3386-33-2	Octadecane, 1-chloro-	40.86	700	JN
04		UNKNOWN	40.95	640	J
05		UNKNOWN	41.22	570	J
06		UNKNOWN	41.57	610	J
07		UNKNOWN	42.00	340	J
08	13360-61-7	1-Pentadecene	42.89	350	JN
09	0-00-0	17-(1,5-Dimethylhexyl)-10,13-dimethy	44.15	800	JN
10	6538-02-9	Ergostanol $$ Ergostan-3-ol, (3.beta	44.20	290	JN
11		UNKNOWN	44.47	400	J
12	18835-33-1	1-Hexacosene	44.52	270	JN
13	0-00-0	5-Cholestene-3-ol, 24-methyl-	44.82	660	JN
14		UNKNOWN	44.89	470	J
15		UNKNOWN	45.03	1000	J
16		UNKNOWN	45.09	680	J
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	8900	

[2]EPA-designated Registry Number.

JN
J
JN
J
JN
J
JN
JN
J

lw 8/15/08

2

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-02A60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
100-52-7	Benzaldehyde	380	U
108-95-2	Phenol	380	U
111-44-4	Bis(2-chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-Oxybis(1-chloropropane)	380	U
98-86-2	Acetophenone	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	Bis(2-chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
105-60-2	Caprolactam	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	380	U
92-52-4	1,1'-Biphenyl	380	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	730	U
131-11-3	Dimethylphthalate	380	U
606-20-2	2,6-Dinitrotoluene	380	U
208-96-8	Acenaphthylene	380	U
99-09-2	3-Nitroaniline	730	U
83-32-9	Acenaphthene	380	U

8/15/08

2

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-02A60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
51-28-5	2,4-Dinitrophenol	730	U
100-02-7	4-Nitrophenol	730	U
132-64-9	Dibenzofuran	380	U
121-14-2	2,4-Dinitrotoluene	380	U
84-66-2	Diethylphthalate	380	U
86-73-7	Fluorene	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
100-01-6	4-Nitroaniline	730	U
534-52-1	4,6-Dinitro-2-methylphenol	730	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
95-94-3	1,2,4,5-Tetrachlorobenzene	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
1912-24-9	Atrazine	380	U
87-86-5	Pentachlorophenol	730	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo (a) anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	Bis(2-ethylhexyl)phthalate	370	J
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo (b) fluoranthene	380	U
207-08-9	Benzo (k) fluoranthene	380	U
50-32-8	Benzo (a) pyrene	380	U
193-39-5	Indeno (1,2,3-cd) pyrene	380	U
53-70-3	Dibenzo (a,h) anthracene	380	U
191-24-2	Benzo (g,h,i) perylene	380	U
58-90-2	2,3,4,6-Tetrachlorophenol	380	U

[1]Cannot be separated from Diphenylamine

JW 8/15/08

2

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-02A60.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
01	544-63-8	Tetradecanoic Acid	34.72	550	JN	JN
02		UNKNOWN	40.12	990	J	J
03		UNKNOWN	40.49	1600	J	
04		UNKNOWN	40.68	2700	J	
05		UNKNOWN	40.86	2200	J	
06		UNKNOWN	40.95	2600	J	
07		UNKNOWN	41.03	670	J	
08		UNKNOWN	41.22	2000	J	
09		UNKNOWN	41.30	750	J	
10		UNKNOWN	41.58	1400	J	
11		UNKNOWN	42.00	530	J	
12	3452-07-1	1-Eicosene $$ .alpha.-Eicosene $$ Ce	42.24	540	JN	JN
13	2136-70-1	Ethanol, 2-(tetradecyloxy)-	42.90	580	JN	
14	0-00-0	17-(1,5-Dimethylhexyl)-10,13-dimethy	44.15	1300	JN	
15		UNKNOWN	44.45	600	J	J
16		UNKNOWN	44.52	570	J	
17		UNKNOWN	44.59	660	J	
18		UNKNOWN	44.74	550	J	
19	0-00-0	5-Cholestene-3-ol, 24-methyl-	44.82	1100	JN	JN
20		UNKNOWN	44.89	840	J	J
21	83-48-7	Stigmasterol	45.03	1900	JN	JN
22		UNKNOWN	45.10	960	J	J
23						
24						
25						
26						
27						
28						
29						
30						
	E966796[2]	Total Alkanes	N/A	19000		

[2]EPA-designated Registry Number.

LW 8/15/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-03JA60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
100-52-7	Benzaldehyde	86	J
108-95-2	Phenol	63	J
111-44-4	Bis(2-chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-Oxybis(1-chloropropane)	380	U
98-86-2	Acetophenone	110	J
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	Bis(2-chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
105-60-2	Caprolactam	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	380	U
92-52-4	1,1'-Biphenyl	380	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	730	U
131-11-3	Dimethylphthalate	380	U
606-20-2	2,6-Dinitrotoluene	380	U
208-96-8	Acenaphthylene	380	U
99-09-2	3-Nitroaniline	730	U
83-32-9	Acenaphthene	380	U

Rev 8/15/08

3

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-03JA60.d

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
51-28-5	2,4-Dinitrophenol	730	U
100-02-7	4-Nitrophenol	730	U
132-64-9	Dibenzofuran	380	U
121-14-2	2,4-Dinitrotoluene	380	U
84-66-2	Diethylphthalate	380	U
86-73-7	Fluorene	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
100-01-6	4-Nitroaniline	730	U
534-52-1	4,6-Dinitro-2-methylphenol	730	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
95-94-3	1,2,4,5-Tetrachlorobenzene	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
1912-24-9	Atrazine	380	U
87-86-5	Pentachlorophenol	730	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo (a) anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	Bis(2-ethylhexyl)phthalate	730	
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo (b) fluoranthene	380	U
207-08-9	Benzo (k) fluoranthene	380	U
50-32-8	Benzo (a) pyrene	380	U
193-39-5	Indeno (1,2,3-cd) pyrene	380	U
53-70-3	Dibenzo (a,h) anthracene	380	U
191-24-2	Benzo (g,h,i) perylene	380	U
58-90-2	2,3,4,6-Tetrachlorophenol	380	U

[1]Cannot be separated from Diphenylamine

lw 8/15/08

3

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 0806033-03JA60.d

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 55.0 Decanted: (Y/N) N Date Received: 06/12/2008

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2008

Injection Volume: 2.0 (uL) GPC Factor: 2.0 Date Analyzed: 07/11/2008

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		UNKNOWN	40.12	5400	J
02		UNKNOWN	40.20	4300	J
03		UNKNOWN	40.36	2500	J
04		UNKNOWN	40.54	6300	J
05		UNKNOWN	40.75	11000	J
06	112-88-9	1-Octadecene	40.88	16000	JN
07		UNKNOWN	40.95	9000	J
08	0-00-0	1-(4-Hydroxyphenylmethyl)-3,6-diazal	41.12	40000	JN
09		UNKNOWN	41.64	810	J
10		UNKNOWN	41.90	1200	J
11	7683-64-9	Squalene	42.03	1300	JN
12		UNKNOWN	42.27	2400	J
13		UNKNOWN	42.91	1200	J
14		UNKNOWN	43.66	2800	J
15		UNKNOWN	43.84	1000	J
16		UNKNOWN	44.16	1700	J
17		UNKNOWN	44.23	830	J
18		UNKNOWN	44.62	2100	J
19	474-62-4	Campesterol	44.86	810	JN
20	83-48-7	Stigmasterol	45.06	1700	JN
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	45000	

J
JN
JN
JN
JN

[2]EPA-designated Registry Number.

SOM01.2 (8/2007)

RW 8/15/08

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-200, Site 86 SDG #: 15561

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: August 15, 2008

Laboratory: CompuChem, Cary, North Carolina Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD01-08B	0806033-01	Soil
1MS	IR86-SD01-08BMS	0806033-01MS	Soil
1MSD	IR86-SD01-08BMSD	0806033-01MSD	Soil
2	IR86-SD02-08B	0806033-02	Soil
2RE	IR86-SD02-08BRE	0806033-02RE	Soil
3	IR86-SD02D-08B	0806033-03	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, USEPA "Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June 2001 and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
06/12/08	1,4-Dioxane	0.002	J/R	All samples

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
06/13/08	1,4-Dioxane	0.002	None	Already qualified due to ICAL

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
1	Chloroform-d	58%	J/UJ
	1,2-Dichloroethane-d4	59%	J/UJ
	Benzene-d6	67%	J/UJ
	1,2-Dichloropropane-d6	59%	J/UJ
	Toluene-d8	56%	J/UJ
	trans-1,3-Dichloropropene-d4	53%	J/UJ
	1,4-Dioxane-d8	47%	J/UJ
	1,1,2,2-Tetrachloroethane-d2	39%	J/UJ
	1,2-Dichlorobenzene-d4	27%	J/UJ
2	Chloroform-d	58%	J/UJ
	1,2-Dichloroethane-d4	58%	J/UJ
	Benzene-d6	64%	J/UJ
	1,2-Dichloropropane-d6	55%	J/UJ
	Toluene-d8	51%	J/UJ
	trans-1,3-Dichloropropene-d4	43%	J/UJ
	1,1,2,2-Tetrachloroethane-d2	33%	J/UJ
	1,2-Dichlorobenzene-d4	16%	J/UJ
2RE	Chloroform-d	58%	J/UJ
	1,2-Dichloroethane-d4	58%	J/UJ
	Benzene-d6	66%	J/UJ
	1,2-Dichloropropane-d6	54%	J/UJ
	Toluene-d8	51%	J/UJ
	trans-1,3-Dichloropropene-d4	43%	J/UJ
	1,1,2,2-Tetrachloroethane-d2	32%	J/UJ
	1,2-Dichlorobenzene-d4	16%	J/UJ
3	1,2-Dichlorobenzene-d4	54%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - LCS samples were not included in this data package.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/kg	Action Level ug/kg	Qualifier	Affected Samples
VBLKHE	Acetone	5.9	59	U	1, 3

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB06112008	Acetone	12	120	U	2, 2DL
	2-Butanone	2.4	24	U	1, 2, 2DL
	Toluene	0.14	0.70	None	All ND
IR86-EB01-06112008	2-Butanone	6.9	69	None	Already qualified
IR86-TB06112008	None	ND	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD02-08B ug/kg	IR86-SD02D-08B ug/kg	RPD	Qualifier
Acetone	89	37 U	NC	None
2-Butanone	19	22 U	NC	None

Tentatively Identified Compounds (TICs) - All "unknown" TICs were qualified as estimated (J), all "known" TICs were qualified (JN) and all TICs affected by blank contamination were qualified (B).

Compound Quantitation – EDS sample ID #2 was reanalyzed due to high concentrations of target analytes. The original results should be used for reporting purposes due to surrogate deficiencies.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0191.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 28.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
75-71-8	Dichlorodifluoromethane	6.9	U	
74-87-3	Chloromethane	6.9	U	
75-01-4	Vinyl chloride	6.9	U	
74-83-9	Bromomethane	6.9	U	
75-00-3	Chloroethane	6.9	U	
75-69-4	Trichlorofluoromethane	6.9	~~U~~	UJ SSL
75-35-4	1,1-Dichloroethene	6.9	~~U~~	UJ SSL
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	6.9	~~U~~	UJ SSL
67-64-1	Acetone	57	~~B~~	U BL
75-15-0	Carbon disulfide	6.9	U	
79-20-9	Methyl acetate	6.9	~~U~~	UJ SSL
75-09-2	Methylene chloride	0.91	~~J~~	J SSL
156-60-5	trans-1,2-Dichloroethene	6.9	U	
1634-04-4	Methyl tert-butyl ether	6.9	~~U~~	UJ SSL
75-34-3	1,1-Dichloroethane	6.9	~~U~~	UJ SSL
156-59-2	cis-1,2-Dichloroethene	6.9	U	
78-93-3	2-Butanone	14 12	~~U~~	U BL
74-97-5	Bromochloromethane	6.9	~~U~~	UJ SSL
67-66-3	Chloroform	6.9	~~U~~	UJ SSL
71-55-6	1,1,1-Trichloroethane	6.9	~~U~~	UJ SSL
110-82-7	Cyclohexane	6.9	~~U~~	UJ SSL
56-23-5	Carbon tetrachloride	6.9	~~U~~	UJ SSL
71-43-2	Benzene	6.9	~~U~~	UJ SSL
107-06-2	1,2-Dichloroethane	6.9	~~U~~	UJ SSL
123-91-1	1,4-Dioxane	140	~~U~~	R ICL

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0191.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 28.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
79-01-6	Trichloroethene	6.9	~~U~~	UJ SSL
108-87-2	Methylcyclohexane	6.9	~~U~~	UJ SSL
78-87-5	1,2-Dichloropropane	6.9	~~U~~	UJ SSL
75-27-4	Bromodichloromethane	6.9	~~U~~	UJ SSL
10061-01-5	cis-1,3-Dichloropropene	6.9	~~U~~	UJ SSL
108-10-1	4-Methyl-2-pentanone	14	U	
108-88-3	Toluene	6.9	~~U~~	UJ SSL
10061-02-6	trans-1,3-Dichloropropene	6.9	~~U~~	UJ SSL
79-00-5	1,1,2-Trichloroethane	6.9	~~U~~	UJ SSL
127-18-4	Tetrachloroethene	6.9	~~U~~	UJ SSL
591-78-6	2-Hexanone	14	U	
124-48-1	Dibromochloromethane	6.9	U	
106-93-4	1,2-Dibromoethane	6.9	U	
108-90-7	Chlorobenzene	6.9	~~U~~	UJ SSL
100-41-4	Ethylbenzene	6.9	~~U~~	UJ SSL
95-47-6	o-Xylene	6.9	~~U~~	UJ SSL
179601-23-1	m,p-Xylene	6.9	~~U~~	UJ SSL
100-42-5	Styrene	6.9	U	
75-25-2	Bromoform	6.9	~~U~~	UJ SSL
98-82-8	Isopropylbenzene	6.9	~~U~~	UJ SSL
79-34-5	1,1,2,2-Tetrachloroethane	6.9	~~U~~	UJ SSL
541-73-1	1,3-Dichlorobenzene	6.9	~~U~~	↓ ↓
106-46-7	1,4-Dichlorobenzene	6.9	~~U~~	↓ ↓
95-50-1	1,2-Dichlorobenzene	6.9	~~U~~	↓ ↓
96-12-8	1,2-Dibromo-3-chloropropane	6.9	~~U~~	UJ SSL
120-82-1	1,2,4-Trichlorobenzene	6.9	~~U~~	↓ ↓
87-61-6	1,2,3-Trichlorobenzene	6.9	~~U~~	↓ ↓

LW 8/15/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD01-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-01

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0191.d

Level: (TRACE or LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 28.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	13.96	2.7	~~U~~
02		UNKNOWN	16.25	5.0	~~U~~
03		Unknown	16.36	2.5	~~U~~
04		Unknown	16.77	14	~~U~~
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A	5.0	

J

[1]EPA-designated Registry Number.

lew 8/15/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0291.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
75-71-8	Dichlorodifluoromethane	11	U	
74-87-3	Chloromethane	11	U	
75-01-4	Vinyl chloride	11	U	
74-83-9	Bromomethane	11	U	
75-00-3	Chloroethane	11	U	
75-69-4	Trichlorofluoromethane	11	~~U~~	UJ SSL
75-35-4	1,1-Dichloroethene	11	~~U~~	↓ ↓
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	11	~~U~~	↓ ↓
67-64-1	Acetone	100	~~B~~	U BL
75-15-0	Carbon disulfide	11	U	
79-20-9	Methyl acetate	11	~~U~~	UJ SSL
75-09-2	Methylene chloride	11	~~U~~	UJ SSL
156-60-5	trans-1,2-Dichloroethene	11	U	
1634-04-4	Methyl tert-butyl ether	11	~~U~~	UJ SSL
75-34-3	1,1-Dichloroethane	11	~~U~~	UJ SSL
156-59-2	cis-1,2-Dichloroethene	11	U	
78-93-3	2-Butanone	22 ~~21~~	~~J~~	U BL
74-97-5	Bromochloromethane	11	~~U~~	UJ SSL
67-66-3	Chloroform	11	~~U~~	↓ ↓
71-55-6	1,1,1-Trichloroethane	11	~~U~~	↓ ↓
110-82-7	Cyclohexane	11	~~U~~	↓ ↓
56-23-5	Carbon tetrachloride	11	~~U~~	↓ ↓
71-43-2	Benzene	11	~~U~~	↓ ↓
107-06-2	1,2-Dichloroethane	11	~~U~~	↓ ↓
123-91-1	1,4-Dioxane	220	~~U~~	R ICL

Report 1,4-Dioxane for Low-Medium VOA analysis only

LW 8/25/08

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0291.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
79-01-6	Trichloroethene	11	~~U~~	UJ SSL
108-87-2	Methylcyclohexane	11	~~U~~	
78-87-5	1,2-Dichloropropane	11	~~U~~	
75-27-4	Bromodichloromethane	11	~~U~~	
10061-01-5	cis-1,3-Dichloropropene	11	~~U~~	
108-10-1	4-Methyl-2-pentanone	22	U	
108-88-3	Toluene	11	~~U~~	UJ SSL
10061-02-6	trans-1,3-Dichloropropene	11	~~U~~	
79-00-5	1,1,2-Trichloroethane	11	~~U~~	
127-18-4	Tetrachloroethene	11	~~U~~	
591-78-6	2-Hexanone	22	U	
124-48-1	Dibromochloromethane	11	U	
106-93-4	1,2-Dibromoethane	11	U	
108-90-7	Chlorobenzene	11	~~U~~	UJ SSL
100-41-4	Ethylbenzene	11	~~U~~	
95-47-6	o-Xylene	11	~~U~~	
179601-23-1	m,p-Xylene	11	~~U~~	
100-42-5	Styrene	11	U	
75-25-2	Bromoform	11	~~U~~	UJ SSL
98-82-8	Isopropylbenzene	11	~~U~~	
79-34-5	1,1,2,2-Tetrachloroethane	11	~~U~~	
541-73-1	1,3-Dichlorobenzene	11	~~U~~	
106-46-7	1,4-Dichlorobenzene	11	~~U~~	
95-50-1	1,2-Dichlorobenzene	11	~~U~~	
96-12-8	1,2-Dibromo-3-chloropropane	11	~~U~~	
120-82-1	1,2,4-Trichlorobenzene	11	~~U~~	
87-61-6	1,2,3-Trichlorobenzene	11	~~U~~	

LW 8/25/08

2

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD02-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0291.d

Level: (TRACE or LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 49.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

lw 8/15/08

2RE

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08BRE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02RE1

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-2R91.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008 Use original

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
75-71-8	Dichlorodifluoromethane	11	U	
74-87-3	Chloromethane	11	U	
75-01-4	Vinyl chloride	11	U	
74-83-9	Bromomethane	11	U	
75-00-3	Chloroethane	11	U	
75-69-4	Trichlorofluoromethane	11	~~U~~	UJ SSL
75-35-4	1,1-Dichloroethene	11	~~U~~	↓ ↓
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	11	~~U~~	
67-64-1	Acetone	100		U BL
75-15-0	Carbon disulfide	11	U	
79-20-9	Methyl acetate	11	~~U~~	UJ SSL
75-09-2	Methylene chloride	11	~~U~~	UJ SSL
156-60-5	trans-1,2-Dichloroethene	11	U	
1634-04-4	Methyl tert-butyl ether	11	~~U~~	UJ SSL
75-34-3	1,1-Dichloroethane	11	~~U~~	UJ SSL
156-59-2	cis-1,2-Dichloroethene	11	U	
78-93-3	2-Butanone	24		U BL
74-97-5	Bromochloromethane	11	~~U~~	UJ SSL
67-66-3	Chloroform	11	~~U~~	↓ ↓
71-55-6	1,1,1-Trichloroethane	11	~~U~~	
110-82-7	Cyclohexane	11	~~U~~	
56-23-5	Carbon tetrachloride	11	~~U~~	
71-43-2	Benzene	11	~~U~~	
107-06-2	1,2-Dichloroethane	11	~~U~~	
123-91-1	1,4-Dioxane	220	~~U~~	R ICL

Report 1,4-Dioxane for Low-Medium VOA analysis only

lew 8/25/08

2RE

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02-08BRE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02RE1

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-2R91.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

Use original

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	11	U
108-87-2	Methylcyclohexane	11	U
78-87-5	1,2-Dichloropropane	11	U
75-27-4	Bromodichloromethane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
108-10-1	4-Methyl-2-pentanone	22	U
108-88-3	Toluene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
79-00-5	1,1,2-Trichloroethane	11	U
127-18-4	Tetrachloroethene	11	U
591-78-6	2-Hexanone	22	U
124-48-1	Dibromochloromethane	11	U
106-93-4	1,2-Dibromoethane	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
95-47-6	o-Xylene	11	U
179601-23-1	m,p-Xylene	11	U
100-42-5	Styrene	11	U
75-25-2	Bromoform	11	U
98-82-8	Isopropylbenzene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
95-50-1	1,2-Dichlorobenzene	11	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U
87-61-6	1,2,3-Trichlorobenzene	11	U

UJ SSL

UJ SSL

UJ SSL

UJ SSL

8/25/08

2RE

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD02-08BRE

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-02RE1

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-2R91.d

Level: (TRACE or LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 49.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

Use original

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

RW 8/15/08

3

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0391.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	11	U
74-87-3	Chloromethane	11	U
75-01-4	Vinyl chloride	11	U
74-83-9	Bromomethane	11	U
75-00-3	Chloroethane	11	U
75-69-4	Trichlorofluoromethane	11	U
75-35-4	1,1-Dichloroethene	11	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	11	U
67-64-1	Acetone	37	~~B~~ U BL
75-15-0	Carbon disulfide	11	U
79-20-9	Methyl acetate	11	U
75-09-2	Methylene chloride	11	U
156-60-5	trans-1,2-Dichloroethene	11	U
1634-04-4	Methyl tert-butyl ether	11	U
75-34-3	1,1-Dichloroethane	11	U
156-59-2	cis-1,2-Dichloroethene	11	U
78-93-3	2-Butanone	22	U
74-97-5	Bromochloromethane	11	U
67-66-3	Chloroform	11	U
71-55-6	1,1,1-Trichloroethane	11	U
110-82-7	Cyclohexane	11	U
56-23-5	Carbon tetrachloride	11	U
71-43-2	Benzene	11	U
107-06-2	1,2-Dichloroethane	11	U
123-91-1	1,4-Dioxane	220	~~U~~ R ICL

Report 1,4-Dioxane for Low-Medium VOA analysis only

lw 8/15/08

3

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0391.d

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q	
79-01-6	Trichloroethene	11	U	
108-87-2	Methylcyclohexane	11	U	
78-87-5	1,2-Dichloropropane	11	U	
75-27-4	Bromodichloromethane	11	U	
10061-01-5	cis-1,3-Dichloropropene	11	U	
108-10-1	4-Methyl-2-pentanone	22	U	
108-88-3	Toluene	11	U	
10061-02-6	trans-1,3-Dichloropropene	11	U	
79-00-5	1,1,2-Trichloroethane	11	U	
127-18-4	Tetrachloroethene	11	U	
591-78-6	2-Hexanone	22	U	
124-48-1	Dibromochloromethane	11	U	
106-93-4	1,2-Dibromoethane	11	U	
108-90-7	Chlorobenzene	11	~~U~~	UJ SSL
100-41-4	Ethylbenzene	11	U	
95-47-6	o-Xylene	11	U	
179601-23-1	m,p-Xylene	11	U	
100-42-5	Styrene	11	U	
75-25-2	Bromoform	11	U	
98-82-8	Isopropylbenzene	11	U	
79-34-5	1,1,2,2-Tetrachloroethane	11	U	
541-73-1	1,3-Dichlorobenzene	11	~~U~~	UJ SSL
106-46-7	1,4-Dichlorobenzene	11	~~U~~	↓ ↓
95-50-1	1,2-Dichlorobenzene	11	~~U~~	
96-12-8	1,2-Dibromo-3-chloropropane	11	U	
120-82-1	1,2,4-Trichlorobenzene	11	~~U~~	UJ SSL
87-61-6	1,2,3-Trichlorobenzene	11	~~U~~	UJ SSL

lw 8/15/08

3

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
IR86-SD02D-08B

Lab Name: COMPUCHEM Contract: N62470-02-D-3052

Lab Code: LIBRTY Case No.: 0806033 Mod. Ref No.: SDG No.: 15561

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 0806033-03

Sample wt/vol: 5.00 (g/mL) g Lab File ID: 0806033-0391.d

Level: (TRACE or LOW/MED) LOW Date Received: 06/12/2008

% Moisture: not dec. 55.0 Date Analyzed: 06/13/2008

GC Column: SPB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

lw 8/15/08

ENVIRONMENTAL
Data Services, Inc.

LOW CONCENTRATION VOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-215, Site 86 SDG #: 0810327

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 4, 2009

Laboratory: Empirical Laboratories, LCC, Nashville, Tennessee Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-MW47IW-09D	0810327-01	Water
2	SWMU318-MW08-08D	0810327-02	Water
3	IR86-MW46IW-08D	0810327-03	Water
4	SWMU318-MW05D-08D	0810327-04	Water
5	SWMU318-MW05-08D	0810327-05	Water
6	IR86-MW50IW-08D	0810327-06	Water
7	SWMU318-MW01-08D	0810327-07	Water
8	IR86-TB10252008	0810327-11	Water
9	IR86-MW15-DW-08D	0810327-12	Water
10	IR86-FB10272008	0810327-13	Water
11	IR86-MW48-08D	0810327-14	Water
11MS	IR86-MW48-08DMS	0810327-14MS	Water
11MSD	IR86-MW48-08DMSD	0810327-14MSD	Water

The USEPA "National Function Guidelines for Low Concentration Organic Data Review", June 2001 was used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/30/08	Bromomethane	39.3%	J/UJ	1, 8, 10

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/30/08	2-Butanone	167.9%	J/UJ	1, 8, 10
	MTBE	114.0%	J/UJ	1, 8, 10
10/31/08	Bromomethane	49.1%	J/UJ	2-7, 9
	MTBE	104.4%	J/UJ	2-7, 9, 11

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
11	Bromochloromethane	64%/61%/Ok	J/UJ
	Bromomethane	7%/15%/78	J/R

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
V4BLK1030	2-Butanone	253%	None	All associated ND

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
V4BLK1030	Methylene chloride	0.32	3.2	U	8

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB10252008	None - ND	-	-	-	-
IR86-FB10272008	Acetone	72	720	None	All ND
	Chloroform	0.37	1.85	U	1
	Methylene chloride	4.3	43	None	All ND or already qualified due to MB
IR86-EB0110282008	Acetone	64	640	None	All ND
	Chloroform	0.50	2.5	None	All ND
	Methylene chloride	4.3	43	None	All ND
IR86-EB0210282008	Acetone	62	620	None	All ND

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB0210282008	Chloroform	0.51	2.55	None	All ND
	Methylene chloride	4.2	42	None	All ND

Field Duplicates - Field duplicate results are summarized below.

Compound	SWMU318-MW05-08D ug/L	SWMU318-MW05D-08D ug/L	RPD	Qualifier
cis-1,2-Dichloroethene	0.58	0.59	2%	None
Trichloroethene	1.1	1.3	17%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - Several manual integrations were necessary for the laboratory to perform. No action was required by the reviewer.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-MW47IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032701

Level: (low/med) LOW Date Sampled: 10/26/08 15:35

% Moisture: not dec. _____ Date Analyzed: 10/30/08 22:10

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ CCH
78-93-3	2-Butanone	1.1	5.0		~~U~~ UJ CCH
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50	0.50 ~~0.18~~	J u BL
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ CCH
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

lw
11/14/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-MW47IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032701

Level: (low/med) LOW Date Sampled: 10/26/08 15:35

% Moisture: not dec. _____ Date Analyzed: 10/30/08 22:10

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

dw 11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 2

SWMU318-MW08-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032702

Level: (low/med) LOW Date Sampled: 10/26/08 12:25

% Moisture: not dec. _____ Date Analyzed: 10/31/08 07:56

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ CC
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50	0.15	J
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50	4.1	
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50	0.85	
156-59-2	cis-1,2-Dichloroethene	0.16	0.50	1.2	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ CC
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

lw 1/14/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 2

SWMU318-MW08-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032702

Level: (low/med) LOW Date Sampled: 10/26/08 12:25

% Moisture: not dec. _____ Date Analyzed: 10/31/08 07:56

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50	7.9	
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50	0.21	J
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

RW
1/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 3

IR86-MW46IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032703

Level: (low/med) LOW Date Sampled: 10/26/08 10:35

% Moisture: not dec. _____ Date Analyzed: 10/31/08 08:25

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ CC
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ CC
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

QW 11/11/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 3

IR86-MW46IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032703

Level: (low/med) LOW Date Sampled: 10/26/08 10:35

% Moisture: not dec. _____ Date Analyzed: 10/31/08 08:25

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

lw 11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 4

SWMU318-
MW05D-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032704

Level: (low/med) LOW Date Sampled: 10/25/08 17:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 08:55

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ CC
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50	0.59	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ CC
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

FORM I VOA

RW 11/11/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 4

SWMU318-
MW05D-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032704

Level: (low/med) LOW Date Sampled: 10/25/08 17:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 08:55

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50	1.3	
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

MW
11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
SWMU318-MW05-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032705

Level: (low/med) LOW Date Sampled: 10/25/08 17:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 09:24

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ cc
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50	0.58	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ cc
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

RW 11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 5

SWMU318-
MW05-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032705

Level: (low/med) LOW Date Sampled: 10/25/08 17:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 09:24

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50	1.1	
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

MW
11/11/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 6

IR86-MW50IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032706

Level: (low/med) LOW Date Sampled: 10/26/08 19:30

% Moisture: not dec. _____ Date Analyzed: 10/31/08 09:53

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ cc
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ cc
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

kw 11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-MW50IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032706

Level: (low/med) LOW Date Sampled: 10/26/08 19:30

% Moisture: not dec. _____ Date Analyzed: 10/31/08 09:53

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

fw
1/14/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SWMU318-MW01-08D

7

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032707

Level: (low/med) LOW Date Sampled: 10/25/08 16:05

% Moisture: not dec. _____ Date Analyzed: 10/31/08 10:23

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ CC
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50	0.21	J
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50	0.12	~~J~~ J CH
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

lw 11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

7

SWMU318-
MW01-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032707

Level: (low/med) LOW Date Sampled: 10/25/08 16:05

% Moisture: not dec. _____ Date Analyzed: 10/31/08 10:23

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

MW
11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-TB10252008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-11

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032711

Level: (low/med) LOW Date Sampled: 10/25/08 :

% Moisture: not dec. _____ Date Analyzed: 10/30/08 18:15

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
67-64-1	Acetone	1.8	5.0		U	
71-43-2	Benzene	0.12	0.50		U	
74-97-5	Bromochloromethane	0.17	0.50		U	
75-27-4	Bromodichloromethane	0.18	0.50		U	
75-25-2	Bromoform	0.10	0.50		U	
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ	CCH
78-93-3	2-Butanone	1.1	5.0		~~U~~ UJ	CCH
75-15-0	Carbon disulfide	0.17	0.50		U	
56-23-5	Carbon tetrachloride	0.22	0.50		U	
108-90-7	Chlorobenzene	0.10	0.50		U	
75-00-3	Chloroethane	0.25	0.50		U	
67-66-3	Chloroform	0.17	0.50		U	
74-87-3	Chloromethane	0.36	0.50		U	
110-82-7	Cyclohexane	0.14	0.50		U	
124-48-1	Dibromochloromethane	0.10	0.50		U	
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U	
106-93-4	1,2-Dibromoethane	0.14	0.25		U	
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U	
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U	
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U	
75-71-8	Dichlorodifluoromethane	0.20	0.50		U	
75-34-3	1,1-Dichloroethane	0.19	0.50		U	
107-06-2	1,2-Dichloroethane	0.22	0.38		U	
75-35-4	1,1-Dichloroethene	0.24	0.50		U	
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U	
78-87-5	1,2-Dichloropropane	0.17	0.50		U	
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U	
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U	
100-41-4	Ethylbenzene	0.10	0.50		U	
591-78-6	2-Hexanone	0.42	5.0		U	
98-82-8	Isopropylbenzene	0.11	0.50		U	
79-20-9	Methyl acetate	0.51	1.0		U	
108-87-2	Methyl cyclohexane	0.12	0.50		U	
75-09-2	Methylene chloride	0.27	0.50	0.50 ~~0.29~~	~~J~~ U	BL
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ	CCH
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U	
100-42-5	Styrene	0.11	0.50		U	
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U	

EW 1/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

8

IR86-TB10252008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-11

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032711

Level: (low/med) LOW Date Sampled: 10/25/08 :

% Moisture: not dec. _____ Date Analyzed: 10/30/08 18:15

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

lw
11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 9

IR86-MW15DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-12

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032712

Level: (low/med) LOW Date Sampled: 10/27/08 11:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 10:52

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50		U
74-97-5	Bromochloromethane	0.17	0.50		U
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ cc
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50		U
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50		U
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ cc
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

FORM I VOA

kw
11/11/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 9

IR86-MW15DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-12

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032712

Level: (low/med) LOW Date Sampled: 10/27/08 11:55

% Moisture: not dec. _____ Date Analyzed: 10/31/08 10:52

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

lw
11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-FB10272008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-13

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032713

Level: (low/med) LOW Date Sampled: 10/27/08 15:00

% Moisture: not dec. _____ Date Analyzed: 10/30/08 18:44

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
67-64-1	Acetone	1.8	5.0	72		
71-43-2	Benzene	0.12	0.50		U	
74-97-5	Bromochloromethane	0.17	0.50		U	
75-27-4	Bromodichloromethane	0.18	0.50		U	
75-25-2	Bromoform	0.10	0.50		U	
74-83-9	Bromomethane	0.27	0.50		~~U~~ UJ	CCH
78-93-3	2-Butanone	1.1	5.0		~~U~~ UJ	CCH
75-15-0	Carbon disulfide	0.17	0.50		U	
56-23-5	Carbon tetrachloride	0.22	0.50		U	
108-90-7	Chlorobenzene	0.10	0.50		U	
75-00-3	Chloroethane	0.25	0.50		U	
67-66-3	Chloroform	0.17	0.50	0.37	J	
74-87-3	Chloromethane	0.36	0.50		U	
110-82-7	Cyclohexane	0.14	0.50		U	
124-48-1	Dibromochloromethane	0.10	0.50		U	
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U	
106-93-4	1,2-Dibromoethane	0.14	0.25		U	
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U	
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U	
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U	
75-71-8	Dichlorodifluoromethane	0.20	0.50		U	
75-34-3	1,1-Dichloroethane	0.19	0.50		U	
107-06-2	1,2-Dichloroethane	0.22	0.38		U	
75-35-4	1,1-Dichloroethene	0.24	0.50		U	
156-59-2	cis-1,2-Dichloroethene	0.16	0.50		U	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U	
78-87-5	1,2-Dichloropropane	0.17	0.50		U	
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U	
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U	
100-41-4	Ethylbenzene	0.10	0.50		U	
591-78-6	2-Hexanone	0.42	5.0		U	
98-82-8	Isopropylbenzene	0.11	0.50		U	
79-20-9	Methyl acetate	0.51	1.0		U	
108-87-2	Methyl cyclohexane	0.12	0.50		U	
75-09-2	Methylene chloride	0.27	0.50	4.3		
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ	CCH
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U	
100-42-5	Styrene	0.11	0.50		U	
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U	

ALW 1/14/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 10

IR86-FB10272008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-13

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032713

Level: (low/med) LOW Date Sampled: 10/27/08 15:00

% Moisture: not dec. _____ Date Analyzed: 10/30/08 18:44

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50		U
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

lew
11/4/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 11

IR86-MW48-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-14

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032714

Level: (low/med) LOW Date Sampled: 10/27/08 15:30

% Moisture: not dec. _____ Date Analyzed: 10/31/08 11:22

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.8	5.0		U
71-43-2	Benzene	0.12	0.50	1.5	
74-97-5	Bromochloromethane	0.17	0.50		~~U~~ UJ m
75-27-4	Bromodichloromethane	0.18	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.27	0.50		~~U~~ R m
78-93-3	2-Butanone	1.1	5.0		U
75-15-0	Carbon disulfide	0.17	0.50		U
56-23-5	Carbon tetrachloride	0.22	0.50		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.25	0.50		U
67-66-3	Chloroform	0.17	0.50		U
74-87-3	Chloromethane	0.36	0.50		U
110-82-7	Cyclohexane	0.14	0.50	1.5	
124-48-1	Dibromochloromethane	0.10	0.50		U
96-12-8	1,2-Dibromo-3-chloropropane	0.23	0.25		U
106-93-4	1,2-Dibromoethane	0.14	0.25		U
95-50-1	1,2-Dichlorobenzene	0.16	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.20	0.50		U
75-34-3	1,1-Dichloroethane	0.19	0.50		U
107-06-2	1,2-Dichloroethane	0.22	0.38		U
75-35-4	1,1-Dichloroethene	0.24	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.16	0.50	1.9	
156-60-5	trans-1,2-Dichloroethene	0.21	0.50		U
78-87-5	1,2-Dichloropropane	0.17	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.12	0.50		U
10061-02-6	trans-1,3-Dichloropropene	0.17	0.50		U
100-41-4	Ethylbenzene	0.10	0.50		U
591-78-6	2-Hexanone	0.42	5.0		U
98-82-8	Isopropylbenzene	0.11	0.50		U
79-20-9	Methyl acetate	0.51	1.0		U
108-87-2	Methyl cyclohexane	0.12	0.50	0.37	J
75-09-2	Methylene chloride	0.27	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		~~U~~ UJ cc
108-10-1	4-Methyl-2-pentanone	0.50	5.0		U
100-42-5	Styrene	0.11	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.23	0.50		U

11/11/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 11

IR86-MW48-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10327

Matrix: (soil/water) WATER Lab Sample ID: 0810327-14

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1032714

Level: (low/med) LOW Date Sampled: 10/27/08 15:30

% Moisture: not dec. _____ Date Analyzed: 10/31/08 11:22

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.16	0.50		U
108-88-3	Toluene	0.14	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.14	0.50		U
120-82-1	1,2,4-Trichlorobenzene	0.18	0.50		U
71-55-6	1,1,1-Trichloroethane	0.20	0.50		U
79-00-5	1,1,2-Trichloroethane	0.14	0.50		U
79-01-6	Trichloroethene	0.18	0.50	0.98	
75-69-4	Trichlorofluoromethane	0.22	0.50		U
76-13-1	Trichlorotrifluoroethane	0.12	0.50		U
75-01-4	Vinyl chloride	0.19	0.50		U
136777-61-2	m,p-Xylene	0.21	1.0		U
95-47-6	o-Xylene	0.10	0.50		U

lew
11/11/09

ENVIRONMENTAL
Data Services, Inc.

LOW CONCENTRATION VOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, CTO-215, Site 86 SDG #: 0810335

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 4, 2009

Laboratory: Empirical Laboratories, LCC, Nashville, Tennessee Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB0110282008	0810335-01	Water
2	IR86-MW45DW-08D	0810335-02	Water
3	IR86-MW40IW-08D	0810335-03	Water
4	IR86-MW44DW-08D	0810335-04	Water
5	IR86-MW44DWD-08D	0810335-05	Water
6	IR86-EB0210282008	0810335-06	Water
7	IR86-TB10282008	0810335-07	Water

The USEPA "National Function Guidelines for Low Concentration Organic Data Review", June 2001 was used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/04/08	1,2,3-Trichlorobenzene	48.1%	J/UJ	1, 6, 7
	1,2,4-Trichlorobenzene	47.6%	J/UJ	1, 6, 7
11/05/08	Carbon tetrachloride	25.6%	J/UJ	2-5
	Dichlorodifluoromethane	38.6%	J/UJ	2-5
	1,2-Dichloroethane	28.1%	J/UJ	2-5
	1,2,3-Trichlorobenzene	60.1%	J/UJ	2-5
	1,2,4-Trichlorobenzene	60.2%	J/UJ	2-5

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/05/08	Trichlorofluoromethane	31.3%	J/UJ	2-5

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
V3BLK1104E	Dichlorodifluoromethane	169%	None	All associated ND
	1,2,3-Trichlorobenzene	166%	None	All associated ND
	1,2,4-Trichlorobenzene	154%	None	All associated ND
V3BLK1104	Dichlorodifluoromethane	156%	None	All associated ND
	1,2,3-Trichlorobenzene	143%	None	All associated ND
	1,2,4-Trichlorobenzene	136%	None	All associated ND

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
VBLK1104	1,4-Dichlorobenzene	0.12	0.60	None	All associated ND
	Methylene chloride	0.38	3.8	U	7
	1,2,3-Trichlorobenzene	0.30	1.5	U	7
	1,2,4-Trichlorobenzene	0.30	1.5	U	1, 6, 7
V3BLK1104E	Methylene chloride	0.49	4.9	None	All associated ND
	1,2,3-Trichlorobenzene	0.36	1.80	None	All associated ND
	1,2,4-Trichlorobenzene	0.25	1.25	None	All associated ND

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB0110282008	Acetone	64	640	None	All associated ND
	Chloroform	0.50	2.5	None	All associated ND
	Methylene chloride	4.3	43	None	All associated ND
IR86-EB0210282008	Acetone	62	620	None	All associated ND
	Chloroform	0.51	2.55	None	All associated ND
	Methylene chloride	4.2	42	None	All associated ND

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-TB10282008	None - ND	-	-	-	-
IR86-FB10272008	Acetone	72	720	None	All associated ND
	Chloroform	0.37	1.85	None	All associated ND
	Methylene chloride	4.3	43	None	All associated ND

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-MW44DW-08D ug/L	IR86-MW44DWD-08D ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-EB0
110282008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033501

Level: (low/med) LOW Date Sampled: 10/28/08 08:00

% Moisture: not dec. _____ Date Analyzed: 11/04/08 15:34

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	0.84	5.0	64	
71-43-2	Benzene	0.11	0.50		U
74-97-5	Bromochloromethane	0.11	0.50		U
75-27-4	Bromodichloromethane	0.10	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.32	0.50		U
78-93-3	2-Butanone	1.0	5.0		U
75-15-0	Carbon disulfide	0.13	0.50		U
56-23-5	Carbon tetrachloride	0.15	0.27		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.18	0.50		U
67-66-3	Chloroform	0.11	0.50	0.50	J
74-87-3	Chloromethane	0.29	0.50		U
110-82-7	Cyclohexane	0.20	0.50		U
124-48-1	Dibromochloromethane	0.10	0.41		U
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U
106-93-4	1,2-Dibromoethane	0.10	0.25		U
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.22	0.50		U
75-34-3	1,1-Dichloroethane	0.12	0.50		U
107-06-2	1,2-Dichloroethane	0.10	0.38		U
75-35-4	1,1-Dichloroethene	0.15	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U
78-87-5	1,2-Dichloropropane	0.10	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U
100-41-4	Ethylbenzene	0.13	0.50		U
591-78-6	2-Hexanone	0.30	5.0		U
98-82-8	Isopropylbenzene	0.15	0.50		U
79-20-9	Methyl acetate	0.30	1.0		U
108-87-2	Methyl cyclohexane	0.17	0.50		U
75-09-2	Methylene chloride	0.14	0.50	4.3	~~B~~
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U
100-42-5	Styrene	0.10	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U

FORM I VOA

LW 1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-EB0
110282008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033501

Level: (low/med) LOW Date Sampled: 10/28/08 08:00

% Moisture: not dec. _____ Date Analyzed: 11/04/08 15:34

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.15	0.50		U
108-88-3	Toluene	0.10	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ CC
120-82-1	1,2,4-Trichlorobenzene	0.10	0.50	0.56 ~~0.16~~	~~JB~~ UJ B CC
71-55-6	1,1,1-Trichloroethane	0.17	0.50		U
79-00-5	1,1,2-Trichloroethane	0.10	0.50		U
79-01-6	Trichloroethene	0.13	0.50		U
75-69-4	Trichlorofluoromethane	0.17	0.50		U
76-13-1	Trichlorotrifluoroethane	0.18	0.50		U
75-01-4	Vinyl chloride	0.18	0.50		U
136777-61-2	m,p-Xylene	0.22	0.50		U
95-47-6	o-Xylene	0.10	0.50		U

MW
1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 2

IR86-MW45DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033502

Level: (low/med) LOW Date Sampled: 10/28/08 10:20

% Moisture: not dec. _____ Date Analyzed: 11/05/08 10:01

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
67-64-1	Acetone	0.84	5.0		U	
71-43-2	Benzene	0.11	0.50		U	
74-97-5	Bromochloromethane	0.11	0.50		U	
75-27-4	Bromodichloromethane	0.10	0.50		U	
75-25-2	Bromoform	0.10	0.50		U	
74-83-9	Bromomethane	0.32	0.50		UJ	
78-93-3	2-Butanone	1.0	5.0		U	
75-15-0	Carbon disulfide	0.13	0.50		U	
56-23-5	Carbon tetrachloride	0.15	0.27		UJ	cc
108-90-7	Chlorobenzene	0.10	0.50		U	
75-00-3	Chloroethane	0.18	0.50		U	
67-66-3	Chloroform	0.11	0.50		U	
74-87-3	Chloromethane	0.29	0.50		U	
110-82-7	Cyclohexane	0.20	0.50		U	
124-48-1	Dibromochloromethane	0.10	0.41		U	
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U	
106-93-4	1,2-Dibromoethane	0.10	0.25		U	
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U	
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U	
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U	
75-71-8	Dichlorodifluoromethane	0.22	0.50		UJ	cc
75-34-3	1,1-Dichloroethane	0.12	0.50		U	
107-06-2	1,2-Dichloroethane	0.10	0.38		UJ	cc
75-35-4	1,1-Dichloroethene	0.15	0.50		U	
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U	
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U	
78-87-5	1,2-Dichloropropane	0.10	0.50		U	
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U	
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U	
100-41-4	Ethylbenzene	0.13	0.50		U	
591-78-6	2-Hexanone	0.30	5.0		U	
98-82-8	Isopropylbenzene	0.15	0.50		U	
79-20-9	Methyl acetate	0.30	1.0		U	
108-87-2	Methyl cyclohexane	0.17	0.50		U	
75-09-2	Methylene chloride	0.14	0.50		U	
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U	
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U	
100-42-5	Styrene	0.10	0.50		U	
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U	

LW
1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 2

IR86-MW45DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033502

Level: (low/med) LOW Date Sampled: 10/28/08 10:20

% Moisture: not dec. _____ Date Analyzed: 11/05/08 10:01

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
127-18-4	Tetrachloroethene	0.15	0.50		U	
108-88-3	Toluene	0.10	0.50		U	
87-61-6	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ	cc
120-82-1	1,2,4-Trichlorobenzene	0.10	0.50		~~U~~ UJ	cc
71-55-6	1,1,1-Trichloroethane	0.17	0.50		U	
79-00-5	1,1,2-Trichloroethane	0.10	0.50		U	
79-01-6	Trichloroethene	0.13	0.50		U	
75-69-4	Trichlorofluoromethane	0.17	0.50		~~U~~ UJ	cc
76-13-1	Trichlorotrifluoroethane	0.18	0.50		U	
75-01-4	Vinyl chloride	0.18	0.50		U	
136777-61-2	m,p-Xylene	0.22	0.50		U	
95-47-6	o-Xylene	0.10	0.50		U	

MW
11/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 3

IR86-MW40IW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033503

Level: (low/med) LOW Date Sampled: 10/28/08 13:10

% Moisture: not dec. _____ Date Analyzed: 11/05/08 10:31

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
67-64-1	Acetone	0.84	5.0		U	
71-43-2	Benzene	0.11	0.50	14		
74-97-5	Bromochloromethane	0.11	0.50		U	
75-27-4	Bromodichloromethane	0.10	0.50		U	
75-25-2	Bromoform	0.10	0.50		U	
74-83-9	Bromomethane	0.32	0.50		U	
78-93-3	2-Butanone	1.0	5.0		U	
75-15-0	Carbon disulfide	0.13	0.50		U	
56-23-5	Carbon tetrachloride	0.15	0.27		~~U~~ UJ	CC
108-90-7	Chlorobenzene	0.10	0.50		U	
75-00-3	Chloroethane	0.18	0.50		U	
67-66-3	Chloroform	0.11	0.50		U	
74-87-3	Chloromethane	0.29	0.50		U	
110-82-7	Cyclohexane	0.20	0.50		U	
124-48-1	Dibromochloromethane	0.10	0.41		U	
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U	
106-93-4	1,2-Dibromoethane	0.10	0.25		U	
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U	
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U	
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U	
75-71-8	Dichlorodifluoromethane	0.22	0.50		~~U~~ UJ	CC
75-34-3	1,1-Dichloroethane	0.12	0.50	0.88		
107-06-2	1,2-Dichloroethane	0.10	0.38		~~U~~ UJ	CC
75-35-4	1,1-Dichloroethene	0.15	0.50	0.72		
156-59-2	cis-1,2-Dichloroethene	0.13	0.50	14		
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U	
78-87-5	1,2-Dichloropropane	0.10	0.50		U	
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U	
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U	
100-41-4	Ethylbenzene	0.13	0.50	0.23	J	
591-78-6	2-Hexanone	0.30	5.0		U	
98-82-8	Isopropylbenzene	0.15	0.50		U	
79-20-9	Methyl acetate	0.30	1.0		U	
108-87-2	Methyl cyclohexane	0.17	0.50		U	
75-09-2	Methylene chloride	0.14	0.50		U	
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U	
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U	
100-42-5	Styrene	0.10	0.50		U	
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U	

KW 11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-MW40IW-08D

3

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033503

Level: (low/med) LOW Date Sampled: 10/28/08 13:10

% Moisture: not dec. _____ Date Analyzed: 11/05/08 10:31

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4------	Tetrachloroethene	0.15	0.50	17	
108-88-3------	Toluene	0.10	0.50	0.53	
87-61-6-------	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ cc
120-82-1------	1,2,4-Trichlorobenzene	0.10	0.50		~~U~~ UJ cc
71-55-6-------	1,1,1-Trichloroethane	0.17	0.50		U
79-00-5-------	1,1,2-Trichloroethane	0.10	0.50		U
79-01-6-------	Trichloroethene	0.13	0.50	3.2	
75-69-4-------	Trichlorofluoromethane	0.17	0.50		~~U~~ UJ cc
76-13-1-------	Trichlorotrifluoroethane	0.18	0.50		U
75-01-4-------	Vinyl chloride	0.18	0.50		U
136777-61-2---	m,p-Xylene	0.22	0.50		U
95-47-6-------	o-Xylene	0.10	0.50	0.16	J

FORM I VOA

lw
1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

4

IR86-MW44DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033504

Level: (low/med) LOW Date Sampled: 10/28/08 14:25

% Moisture: not dec. _____ Date Analyzed: 11/05/08 11:01

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	0.84	5.0		U
71-43-2	Benzene	0.11	0.50		U
74-97-5	Bromochloromethane	0.11	0.50		U
75-27-4	Bromodichloromethane	0.10	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.32	0.50		U
78-93-3	2-Butanone	1.0	5.0		U
75-15-0	Carbon disulfide	0.13	0.50		U
56-23-5	Carbon tetrachloride	0.15	0.27		~~U~~ UJ CC
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.18	0.50		U
67-66-3	Chloroform	0.11	0.50		U
74-87-3	Chloromethane	0.29	0.50		U
110-82-7	Cyclohexane	0.20	0.50		U
124-48-1	Dibromochloromethane	0.10	0.41		U
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U
106-93-4	1,2-Dibromoethane	0.10	0.25		U
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.22	0.50		~~U~~ UJ CC
75-34-3	1,1-Dichloroethane	0.12	0.50		U
107-06-2	1,2-Dichloroethane	0.10	0.38		~~U~~ UJ CC
75-35-4	1,1-Dichloroethene	0.15	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U
78-87-5	1,2-Dichloropropane	0.10	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U
100-41-4	Ethylbenzene	0.13	0.50		U
591-78-6	2-Hexanone	0.30	5.0		U
98-82-8	Isopropylbenzene	0.15	0.50		U
79-20-9	Methyl acetate	0.30	1.0		U
108-87-2	Methyl cyclohexane	0.17	0.50		U
75-09-2	Methylene chloride	0.14	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U
100-42-5	Styrene	0.10	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U

LW
11/1/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 4

IR86-MW44DW-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033504

Level: (low/med) LOW Date Sampled: 10/28/08 14:25

% Moisture: not dec. _____ Date Analyzed: 11/05/08 11:01

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.15	0.50		U
108-88-3	Toluene	0.10	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ CC
120-82-1	1,2,4-Trichlorobenzene	0.10	0.50		~~U~~ UJ CC
71-55-6	1,1,1-Trichloroethane	0.17	0.50		U
79-00-5	1,1,2-Trichloroethane	0.10	0.50		U
79-01-6	Trichloroethene	0.13	0.50		U
75-69-4	Trichlorofluoromethane	0.17	0.50		~~U~~ UJ CC
76-13-1	Trichlorotrifluoroethane	0.18	0.50		U
75-01-4	Vinyl chloride	0.18	0.50		U
136777-61-2	m,p-Xylene	0.22	0.50		U
95-47-6	o-Xylene	0.10	0.50		U

FORM I VOA

KW
1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 5

IR86-MW4
4DWD-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033505

Level: (low/med) LOW Date Sampled: 10/28/08 14:25

% Moisture: not dec. _____ Date Analyzed: 11/05/08 11:30

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	0.84	5.0		U
71-43-2	Benzene	0.11	0.50		U
74-97-5	Bromochloromethane	0.11	0.50		U
75-27-4	Bromodichloromethane	0.10	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.32	0.50		U
78-93-3	2-Butanone	1.0	5.0		U
75-15-0	Carbon disulfide	0.13	0.50		U
56-23-5	Carbon tetrachloride	0.15	0.27		~~U~~ UJ cc
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.18	0.50		U
67-66-3	Chloroform	0.11	0.50		U
74-87-3	Chloromethane	0.29	0.50		U
110-82-7	Cyclohexane	0.20	0.50		U
124-48-1	Dibromochloromethane	0.10	0.41		U
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U
106-93-4	1,2-Dibromoethane	0.10	0.25		U
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.22	0.50		~~U~~ UJ cc
75-34-3	1,1-Dichloroethane	0.12	0.50		U
107-06-2	1,2-Dichloroethane	0.10	0.38		~~U~~ UJ cc
75-35-4	1,1-Dichloroethene	0.15	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U
78-87-5	1,2-Dichloropropane	0.10	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U
100-41-4	Ethylbenzene	0.13	0.50		U
591-78-6	2-Hexanone	0.30	5.0		U
98-82-8	Isopropylbenzene	0.15	0.50		U
79-20-9	Methyl acetate	0.30	1.0		U
108-87-2	Methyl cyclohexane	0.17	0.50		U
75-09-2	Methylene chloride	0.14	0.50		U
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U
100-42-5	Styrene	0.10	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U

MW 11/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 5

IR86-MW4
4DWD-08D

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033505

Level: (low/med) LOW Date Sampled: 10/28/08 14:25

% Moisture: not dec. _____ Date Analyzed: 11/05/08 11:30

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q	
127-18-4	Tetrachloroethene	0.15	0.50		U	
108-88-3	Toluene	0.10	0.50		U	
87-61-6	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ	cc
120-82-1	1,2,4-Trichlorobenzene	0.10	0.50		~~U~~ UJ	cc
71-55-6	1,1,1-Trichloroethane	0.17	0.50		U	
79-00-5	1,1,2-Trichloroethane	0.10	0.50		U	
79-01-6	Trichloroethene	0.13	0.50		U	
75-69-4	Trichlorofluoromethane	0.17	0.50		~~U~~ UJ	cc
76-13-1	Trichlorotrifluoroethane	0.18	0.50		U	
75-01-4	Vinyl chloride	0.18	0.50		U	
136777-61-2	m,p-Xylene	0.22	0.50		U	
95-47-6	o-Xylene	0.10	0.50		U	

LW 11/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IR86-EB0
210282008

6

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033506

Level: (low/med) LOW Date Sampled: 10/28/08 15:30

% Moisture: not dec. _____ Date Analyzed: 11/04/08 16:04

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	0.84	5.0	62	
71-43-2	Benzene	0.11	0.50		U
74-97-5	Bromochloromethane	0.11	0.50		U
75-27-4	Bromodichloromethane	0.10	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.32	0.50		U
78-93-3	2-Butanone	1.0	5.0		U
75-15-0	Carbon disulfide	0.13	0.50		U
56-23-5	Carbon tetrachloride	0.15	0.27		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.18	0.50		U
67-66-3	Chloroform	0.11	0.50	0.51	
74-87-3	Chloromethane	0.29	0.50		U
110-82-7	Cyclohexane	0.20	0.50		U
124-48-1	Dibromochloromethane	0.10	0.41		U
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U
106-93-4	1,2-Dibromoethane	0.10	0.25		U
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.22	0.50		U
75-34-3	1,1-Dichloroethane	0.12	0.50		U
107-06-2	1,2-Dichloroethane	0.10	0.38		U
75-35-4	1,1-Dichloroethene	0.15	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U
78-87-5	1,2-Dichloropropane	0.10	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U
100-41-4	Ethylbenzene	0.13	0.50		U
591-78-6	2-Hexanone	0.30	5.0		U
98-82-8	Isopropylbenzene	0.15	0.50		U
79-20-9	Methyl acetate	0.30	1.0		U
108-87-2	Methyl cyclohexane	0.17	0.50		U
75-09-2	Methylene chloride	0.14	0.50	4.2	~~B~~
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U
100-42-5	Styrene	0.10	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U

HW
11/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 6

IR86-EB0
210282008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033506

Level: (low/med) LOW Date Sampled: 10/28/08 15:30

% Moisture: not dec. _____ Date Analyzed: 11/04/08 16:04

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.15	0.50		U
108-88-3	Toluene	0.10	0.50		U
87-61-6	1,2,3-Trichlorobenzene	0.10	0.50		~~U~~ UJ cc
120-82-1	1,2,4-Trichlorobenzene	0.10	0.50	0.50 ~~0.11~~ ~~JB~~	UJB cc
71-55-6	1,1,1-Trichloroethane	0.17	0.50		U
79-00-5	1,1,2-Trichloroethane	0.10	0.50		U
79-01-6	Trichloroethene	0.13	0.50		U
75-69-4	Trichlorofluoromethane	0.17	0.50		U
76-13-1	Trichlorotrifluoroethane	0.18	0.50		U
75-01-4	Vinyl chloride	0.18	0.50		U
136777-61-2	m,p-Xylene	0.22	0.50		U
95-47-6	o-Xylene	0.10	0.50		U

LW 1/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 7

IR86-TB10282008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033507

Level: (low/med) LOW Date Sampled: 10/28/08 :

% Moisture: not dec. _____ Date Analyzed: 11/04/08 15:03

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	0.84	5.0		U
71-43-2	Benzene	0.11	0.50		U
74-97-5	Bromochloromethane	0.11	0.50		U
75-27-4	Bromodichloromethane	0.10	0.50		U
75-25-2	Bromoform	0.10	0.50		U
74-83-9	Bromomethane	0.32	0.50		U
78-93-3	2-Butanone	1.0	5.0		U
75-15-0	Carbon disulfide	0.13	0.50		U
56-23-5	Carbon tetrachloride	0.15	0.27		U
108-90-7	Chlorobenzene	0.10	0.50		U
75-00-3	Chloroethane	0.18	0.50		U
67-66-3	Chloroform	0.11	0.50		U
74-87-3	Chloromethane	0.29	0.50		U
110-82-7	Cyclohexane	0.20	0.50		U
124-48-1	Dibromochloromethane	0.10	0.41		U
96-12-8	1,2-Dibromo-3-chloropropane	0.11	0.25		U
106-93-4	1,2-Dibromoethane	0.10	0.25		U
95-50-1	1,2-Dichlorobenzene	0.10	0.50		U
541-73-1	1,3-Dichlorobenzene	0.13	0.50		U
106-46-7	1,4-Dichlorobenzene	0.10	0.50		U
75-71-8	Dichlorodifluoromethane	0.22	0.50		U
75-34-3	1,1-Dichloroethane	0.12	0.50		U
107-06-2	1,2-Dichloroethane	0.10	0.38		U
75-35-4	1,1-Dichloroethene	0.15	0.50		U
156-59-2	cis-1,2-Dichloroethene	0.13	0.50		U
156-60-5	trans-1,2-Dichloroethene	0.13	0.50		U
78-87-5	1,2-Dichloropropane	0.10	0.50		U
10061-01-5	cis-1,3-Dichloropropene	0.11	0.25		U
10061-02-6	trans-1,3-Dichloropropene	0.10	0.25		U
100-41-4	Ethylbenzene	0.13	0.50		U
591-78-6	2-Hexanone	0.30	5.0		U
98-82-8	Isopropylbenzene	0.15	0.50		U
79-20-9	Methyl acetate	0.30	1.0		U
108-87-2	Methyl cyclohexane	0.17	0.50		U
75-09-2	Methylene chloride	0.14	0.50	0.50 ~~0.29~~ ~~JB~~	U B
1634-04-4	Methyl-tert-butyl ether (MTB	0.10	0.50		U
108-10-1	4-Methyl-2-pentanone	0.29	5.0		U
100-42-5	Styrene	0.10	0.50		U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.25		U

FORM I VOA

lw 11/6/09

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 7

IR86-TB10282008

Lab Name: EMPIRICAL LABS Contract: CH2MHILL

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CH2.V10335

Matrix: (soil/water) WATER Lab Sample ID: 0810335-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 1033507

Level: (low/med) LOW Date Sampled: 10/28/08 :

% Moisture: not dec. _____ Date Analyzed: 11/04/08 15:03

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4------	Tetrachloroethene	0.15	0.50		U
108-88-3------	Toluene	0.10	0.50		U
87-61-6-------	1,2,3-Trichlorobenzene	0.10	0.50	0.50 ~~0.32~~	~~JB~~ UJ
120-82-1------	1,2,4-Trichlorobenzene	0.10	0.50	0.50 ~~0.23~~	~~JB~~ UJ
71-55-6-------	1,1,1-Trichloroethane	0.17	0.50		U
79-00-5-------	1,1,2-Trichloroethane	0.10	0.50		U
79-01-6-------	Trichloroethene	0.13	0.50		U
75-69-4-------	Trichlorofluoromethane	0.17	0.50		U
76-13-1-------	Trichlorotrifluoroethane	0.18	0.50		U
75-01-4-------	Vinyl chloride	0.18	0.50		U
136777-61-2---	m,p-Xylene	0.22	0.50		U
95-47-6-------	o-Xylene	0.10	0.50		U

LW 11/6/09

DataQual

Environmental Services, LLC

CH2M HILL-VBO
5700 Cleveland Street
Suite 101
Virginia Beach, VA 23462

July 3, 2006
SDG#s E0412, E0424 and E0622–Site 86, Mitkem Corporation
MCB Camp Lejeune, Jacksonville, NC

Dear Ms. Arroyo,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG #s E0412, E0424 and E0622. The data validation was performed in accordance with the EPA CLP Statement of Work OLC03.2 for Low Concentration VOCs, the USEPA CLP National Functional Guidelines for Low Concentration Organic Data Review (June, 2001), and the various methods utilized by the laboratory for the non-CLP parameters. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	LC-VOA	RSK-175	Alk	IC	SUL	Ferrous Fe	Ferric Fe	TOC
SDG# E0412										
IR86-GW31IW-06B	E0412-01	water	X	X	X	X	X	X	X	X
IR86-GW31IW-06BMS	E0412-01MS	water			X	X	X			
IR86-GW31IW-06BMSD	E0412-01MSD	water			X	X	X			
IR86-GW31DW-06B	E0412-02	water	X	X	X	X	X	X	X	X
IR86-GW31DW-06BMS	E0412-02MS	water							X	
IR86-GW31DW-06BMD	E0412-02MD	water							X	
IR86-GW16IW-06B	E0412-03	water	X	X	X	X	X	X	X	X
IR86-GW16DW-06B	E0412-04	water	X	X	X	X	X	X	X	X
IR86-GW16DW-06BMS	E0412-04MS	water	X							
IR86-GW16DW-06BMSD	E0412-04MSD	water	X							
IR86-GW32IW-06B	E0412-05	water	X	X	X	X	X	X	X	X
IR86-GW16DW-06BDUP	E0412-06	water	X	X	X	X	X	X	X	X
IR86-GW13-06B	E0412-07	water	X	X	X	X	X	X	X	X
IR86-14IW-06B	E0412-08	water	X	X	X	X	X	X	X	X
IR86-GW05-06B	E0412-09	water	X	X	X	X	X	X	X	X
IR86-GW06IW-06B	E0412-10	water	X	X	X	X	X	X	X	X
IR86-TB040506	E0412-11	water	X	X						
IR86-FB040506	E0412-12	water	X							
IR86-EB040506	E0412-13	water	X							
IR86-TB040606	E0412-14	water	X	X						
IR86-GW28IW-06B	E0412-15	water	X	X	X	X	X	X	X	X
IR86-GW22IW-06B	E0412-16	water	X	X	X	X	X	X	X	X
IR86-GW12IW-06B	E0412-17	water	X	X	X	X	X	X	X	X
IR86-GW11-06B	E0412-18	water	X	X	X	X	X	X	X	X
IR86-GW15IW-06B	E0412-19	water	X	X	X	X	X	X	X	X
IR86-GW15DW-06B	E0412-20	water	X	X	X	X	X	X	X	X
SDG# E0424										
IR86-GW20IW-06B	E0424-01	water	X	X	X	X	X	X	X	X

5830 Amberway Drive • St. Louis, MO 63128 • 314-330-1327 • Fax 314-849-6264

Sample ID	Lab ID	Matrix	LC-VOA	RSK-175	Alk	IC	SUL	Ferrous Fe	Ferric Fe	TOC
IR86-GW20IW-06BMS	E0424-01MS	water			X	X	X			
IR86-GW20IW-06BMSD	E0424-01MSD	water			X	X	X			
IR86-GW08IW-06B	E0424-02	water	X	X	X	X	X	X	X	X
IR86-GW07-06B	E0424-03	water	X	X	X	X	X	X	X	X
IR86-GW01-06B	E0424-04	water	X	X	X	X	X	X	X	X
IR86-GW02IW-06B	E0424-05	water	X	X	X	X	X	X	X	X
IR86-GW29DW-06B	E0424-06	water	X	X	X	X	X	X	X	X
IR86-GW23IW-06B	E0424-07	water	X	X	X	X	X	X	X	X
IR86-GW23IW-06BMS	E0424-07MS	water							X	
IR86-GW23IW-06BMD	E0424-07MD	water							X	
IR86-GW23IW-06BDUP	E0424-08	water	X	X	X	X	X	X	X	X
IR86-EB040606	E0424-09	water	X							
IR86-GW04IW-06B	E0424-10	water	X	X	X	X	X	X	X	X
IR86-GW04IW-06BDUP	E0424-11	water	X	X	X	X	X	X	X	X
IR86-TB040706	E0424-12	water	X	X						
IR86-EB040706	E0424-13	water	X							
IR86-GW18DW-06B	E0424-14	water	X	X	X	X	X	X	X	X
IR86-GW18DW-06BMS	E0424-14MS	water	X							
IR86-GW18DW-06BMSD	E0424-14MSD	water	X							
IR86-GW17IW-06B	E0424-15	water	X	X	X	X	X	X	X	X
IR86-GW17DW-06B	E0424-16	water	X	X	X	X	X	X	X	X
IR86-GW03-06B	E0424-17	water	X	X	X	X	X	X	X	X
IR86-AS428-GW05-06B	E0424-18	water	X	X	X	X	X	X	X	X
IR86-AS428-GW05-06BMS	E0424-18MS	water				X		X	X	
IR86-AS428-GW05-06BMSD	E0424-18MSD	water				X		X	X	
SDG# E0622										
IR86-GW09-06B	E0622-01	water	X	X	X	X	X	X	X	X
IR86-GW25IW-06B	E0622-02	water	X	X	X	X	X	X	X	X
IR86-GW34IW-06B	E0622-03	water	X	X	X	X	X	X	X	X
IR86-GW33DW-06B	E0622-04	water	X	X	X	X	X	X	X	X
IR86-GW19DW-06B	E0622-05	water	X	X	X	X	X	X	X	X
IR86-GW24IW-06B	E0622-06	water	X	X	X	X	X	X	X	X
IR86-GW24IW-06BMS	E0622-06MS	water	X	X	X	X	X		X	X
IR86-GW24IW-06BMSD	E0622-06MSD	water	X	X	X	X	X		X	X
IR86-GW33DW-06BDUP	E0622-07	water	X	X	X	X	X	X	X	X
IR86-GW27IW-06B	E0622-08	water	X	X	X	X	X	X	X	X
IR86-GW30IW-06B	E0622-09	water	X	X	X	X	X	X	X	X
IR86-GW30IW-06BDUP	E0622-10	water	X	X	X	X	X	X	X	X
IR86-GW21IW-06B	E0622-11	water	X	X	X	X	X	X	X	X
IR86-GW10IW-06B	E0622-12	water	X	X	X	X	X	X	X	X
IR86-GW26IW-06B	E0622-13	water	X	X	X	X	X	X	X	X
IR86-EB051106	E0622-14	water	X							
IR86-FB051106	E0622-15	water	X							
IR86-TB051106	E0622-16	water	X	X						

The following quality control blanks were provided with these SDGs: samples IR86-TB040506, IR86-TB040606, IR86-TB040706 and IR86-TB051106-trip blanks; samples IR86-FB040506 and IR86-FB051106-field blanks; samples IR86-EB040506, IR86-EB040606, IR86-EB040706 and IR86-EB051106-equipment blanks. The following field duplicate pairs were provided with these SDGs: sample IR86-GW16DW-06BDUP-field duplicate of sample IR86-GW16DW-06B; sample IR86-GW04IW-06B-field duplicate of sample IR86-GW04IW-06B; sample IR86-GW23IW-06BDUP-field duplicate of sample

IR86-GW23IW-06B; sample IR86-GW33DW-06BDUP-field duplicate of sample IR86-GW33DW-06B; and sample IR86-GW30IW-06BDUP-field duplicate of sample IR86-GW30IW-06B. The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- Internal Standards
- Blanks
- Surrogate Recoveries
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria.

LC-VOA

SDG# E0412

The continuing calibration standards associated with the samples exhibited non-compliant %Ds for some compounds. Qualifications were added to the data.

Blank contamination was noted in the field QC blanks associated with samples in this batch. Qualifications were added to the data.

Several samples exhibited non-compliant recoveries for one or two deuterated compounds which resulted in qualifying associated compounds as estimated.

One sample required a dilution to obtain positive results within the calibration range.

SDG# E0424

The continuing calibration standards associated with the samples exhibited non-compliant %Ds for some compounds. Qualifications were added to the data.

Blank contamination was noted in the field QC blanks associated with samples in this batch. Qualifications were added to the data.

One sample exhibited low internal standard area recoveries for one standard that resulted in qualifying all associated positive results as estimated and non-detected compounds as rejected.

Several samples exhibited non-compliant recoveries for one or more deuterated compounds which resulted in qualifying associated compounds as estimated.

A field duplicate was submitted for one of the associated field sample in the data package. Due to non-comparable results four compound results were qualified as estimated.

Several samples required a dilution to obtain positive results within the calibration range.

SDG# E0622

The continuing calibration standards associated with the samples exhibited non-compliant %Ds for some compounds. Qualifications were added to the data.

Several samples exhibited non-compliant recoveries for one or more deuterated compounds which resulted in qualifying associated compounds as estimated.

A field duplicate was submitted for one of the associated field sample in the data package. Due to non-comparable results two compound positive results were qualified as estimated.

Several samples required a dilution to obtain positive results within the calibration range.

RSK-175

SDG # E0412

One sample required dilution to obtain positive results within the calibration range. Reported E flagged results were rejected in favor of corresponding results from the dilution analysis.

SDG # E0622

Two samples required dilutions to obtain positive results within the calibration range. Reported E flagged results were rejected in favor of corresponding results from the dilution analyses.

Wet Chemistry Parameters

SDG #E0412

Samples analyzed outside the 24 hour holding time allowed by the lab (flagged H by the lab) for the Ferrous iron analysis were qualified as estimated J/UJ.

The associated MS/MSD analyses for the IC parameter nitrogen as N (nitrate) exhibited recoveries below the lower QC limit of 90% for which qualifications were required. Positive and non-detect results for nitrogen as N (nitrate) were qualified as estimated J/UJ in all samples.

The field duplicate pair of sample IR86-GW16IW-06B exhibited an RPD greater than 100% (106%) for the analyte sulfate in the IC analysis. The reported results for sulfate in the field duplicate pair were qualified as estimated J.

SDG #E0424

Samples analyzed outside the 24 hour holding time allowed by the lab (flagged H by the lab) for the Ferrous iron analysis were qualified as estimated J/UJ.

One of the associated MS/MSD analyses for the IC parameter sulfate exhibited recoveries below the lower QC limit of 90% for which qualifications were required. Positive and non-detect results for sulfate were qualified as estimated J/UJ in associated samples.

SDG #E0622

Samples analyzed outside the 24 hour holding time allowed by the lab (flagged H by the lab) were qualified as estimated J/UJ for the Ferrous iron analysis.

The associated MS/MSD analysis for the IC parameters chloride and nitrogen as N (nitrate) exhibited recoveries above the upper QC limit of 110%. Positive results for chloride and nitrogen, nitrate were qualified as estimated J.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the IC and TOC fractions. Calibration data (raw data and/or summaries) were missing from the data package. Sample data was missing from the data package for the IC fraction. This information was requested from the laboratory. All information requested was received from the lab with the exception of the raw data for the TOC initial calibrations. According to an e-mail response from the lab, the instrument does not print out raw data for standards injected as part of the initial calibration sequence. The system processes the results of the standard injections and provides a calibration curve summary. The summary was provided by the lab. It was noted that some of the ferrous iron samples were filtered prior to analysis. A general question regarding this was sent to the lab. Samples were filtered due to significant suspended solids. Copies of all e-mail correspondence are included in the validation worksheets portion of this validation report.

Technical Holding Times

According to chain of custody records, sampling was performed on 04/5-7/06 and 5/10-11/06, and samples were received at the laboratory 04/6-8/06 and 5/12/06. All sample preparation and analysis was performed within CLP and/or method holding time requirements with the following exception.

Wet Chemistry

SDGs # E0412, E0424 and E0622

For the ferrous iron fraction, all samples analyzed outside of the 24 hour holding time used by the laboratory were qualified as estimated J/UJ with a qualifier code of HT. These samples were analyzed as soon as possible after receipt. The laboratory used an H flag to indicate these results on the data results forms. The following samples were flagged as estimated J/UJ due to the holding time violation:

SDG E0412: IR86-GW28IW-06B, IR86-GW12IW-06B, IR86-GW11-06B, and IR86-GW15IW-06B.

SDG E0424: IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, and IR86-GW17DW-06B.

SDG E0622: IR86-GW09-06B, IR86-GW25IW-06B, IR86-GW34IW-06B, IR86-GW33DW-06B, IR86-GW24IW-06B, IR86-GW33DW-06BDUP, IR86-GW27IW-06B, IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, and IR86-GW10IW-06B.

Initial/Continuing Calibration

VOA

SDG# E0412

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Qual. Code
CC 04/06/06	bromoform	35.0%	IR86-GW31IW-06B, IR86-GW31DW-06B, IR86-16IW-06B, IR86-GW16DW-06B, IR86-TB040506, IR86-GW32IW-06B, IR86-GW16DW-06BDUP, IR86-GW13-06B, IR86-FB040506, IR86-GW14IW-06B, IR86-GW05-06B	J/UJ	CCH

SDG# E0424

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Qualifier Code
CC 04/11/06	trichlorofluoromethane	31.5%	IR86-GW01-06B, IR86-GW04IW-06BDUP, IR86-TB040706, IR86-EB040706, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B, IR86-GW03-06B, IR860AS428-GW05-06B	J/UJ	CCH

SDG# E0622

Calibration standards exhibited %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Qual Code
CC 05/15/06 CC 05/16/06	dichlorodifluoromethane trichlorofluoromethane	37.2%, 32.8% 64.3%, 75.5%	all samples	J/UJ	CCH
CC 05/16/06	1,1,2-trichloro-1,2,2-trifluoroethene tetrachloroethene	35.4% 37.1%	IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW10IW-06B, IR86-EB051106, IR86-FB051106, IR86-GW34IW-06B, IR86-GW26IW-06B, IR86-TB051106	J/UJ	CCH

Internal Standards

VOA

SDG# E0424

Sample IR86-GW29IW-06B exhibited low recoveries for one internal standard, 1,4-dichlorobenzene-d4; therefore all associated positive results were qualified as estimated (J) and non-detected compounds as rejected (R), qualifier code: ISL.

Blanks

VOA

SDG# E0412

The associated field QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. The method blanks associated with field QC blanks exhibited some contamination but the QC blanks were not qualified, per the request of the client.

Blank ID	Compound	Concentration	Reporting Limit
IR86-TB040506	methylene chloride	0.84 ug/L	0.50 ug/L
IR86-TB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-EB040506	methylene chloride	0.52 ug/L	0.50 ug/L
IR86-EB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-FB040505	methylene chloride	0.50 ug/L	0.50 ug/L

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW16DW-06B, IR86-GW28IW-06B, IR86-GW15DW-06B	methylene chloride	CRQL	BL
IR86-GW15IW-06B	methylene chloride	U	BL

SDG# E0424

The associated field QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table.

Blank ID	Compound	Concentration	Reporting Limit
IR86-TB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-TB040706	methylene chloride	2.4 ug/L	0.50 ug/L
IR86-EB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-EB040706	methylene chloride	5.9 ug/L	0.50 ug/L
IR86-FB0405105	methylene chloride	0.50 ug/L	0.50 ug/L

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW20IW-06B, IR86-GW02IW-06B, IR86-GW17IW-06B	methylene chloride	CRQL	BL

Surrogates

VOA

SDG# E0412

The samples listed in the table below exhibited non-compliant surrogate (deuterated monitoring compounds) recovery for the surrogates listed, qualifications were applied as listed.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW16IW-06B	trans-1,3-dichloropropene-d4	66%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		
IR86-GW05-06B	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	bromoform-d	44%	76-135%		
IR86-GW06IW-06B	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	2-hexanone-d5	32%	37-169%		
	bromoform-d	62%	76-135%		
IR86-GW12IW-06B	trans-1,3-dichloropropene-d4	60%	80-128%	J/UJ	SSL
	bromoform-d	60%	76-135%		
IR86-TB040606	trans-1,3-dichloropropene-d4	76%	80-128%	J/UJ	SSL
	bromoform-d	72%	76-135%		
IR86-GW11-06B	trans-1,3-dichloropropene-d4	58%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW15IW-06B	trans-1,3-dichloropropene-d4	72%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		
IR86-GW15DW-06B	trans-1,3-dichloropropene-d4	68%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		

SDG# E0424

The samples listed in the table below exhibited non-compliant surrogate (deuterated monitoring compounds) recovery for the surrogates listed, qualifications were applied as listed.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW02IW-06B	2-butanone-d5	0%	42-171%	J/R	SSL
	trans-1,3-dichloropropene-d4	38%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW29IW-06B	chloroethane-d5	154%	60-126%	J	SSH
	chloroform-d	134%	80-123%		
	1,2-dichloroethane-d4	142%	78-129%		
	benzene-d6	150%	78-121%		
	1,2-dichloropropane-d6	138%	84-123%		
	toluene-d8	148%	77-120%		
	1,1,2,2-tetrachloroethane-d2	138%	75-131%		
	1,2-dichlorobenzene-d4	158%	50-150%		
IR86-GW01-06B	benzene-d6	74%	78-121%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	44%	80-128%		
	bromoform-d	50%	76-135%		
IR86-GW04IW-06B	2-butanone-d5	0%	42-171%	J/R	SSL
	trans-1,3-dichloropropene-d4	52%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW08IW-06B	trans-1,3-dichloropropene-d4	74%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW07-06B	trans-1,3-dichloropropene-d4	40%	80-128%	J/UJ	SSL
	bromoform-d	42%	76-135%		
IR86-GW23IW-06B	trans-1,3-dichloropropene-d4	56%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW23IW-06BDUP	trans-1,3-dichloropropene-d4	72%	80-128%	J/UJ	SSL
	bromoform-d	74%	76-135%		
IR86-GW04IW-06BDUP	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW17DW-06B	trans-1,3-dichloropropene-d4	76%	80-128%	J/UJ	SSL
IR86-AS428-GW05-06B	trans-1,3-dichloropropene-d4	68%	80-128%	J/UJ	SSL

SDG# E0622

The samples listed in the table below exhibited non-compliant surrogate (deuterated monitoring compounds) recovery for the surrogates listed, qualifications were applied as listed.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW25IW-06B	1,1-dichloroethene-d2	260%	65-130%	J	SSH
IR86-GW27IW-06B	2-butanone-d5	22%	42-141%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	66%	80-128%	J/UJ	SSL
	bromoform-d	74%	76-135%		

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR-86-GW10IW-06B	chloroethane-d5	132%	60-126%	J	SSH
	1,1-dichloroethene-d2	0%	65-130%	J/R	SSL
	2-butanone-d5	0%	42-141%		
	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	38%	80-128%		
	bromoform-d	48%	76-135%		
IR86-TB051106	vinyl chloride-d3	40%	49-138%	J/UJ	SSL
IR86-GW21IW-06B	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
IR86-EB051106	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
IR86-GW34IW-06B	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL

Matrix Spike/Matrix Spike Duplicates

Wet Chemistry

SDG #E0412

The MS/MSD pair of sample IR86-GW31IW-06B analyzed for the IC fraction exhibited spike recoveries below the lower QC limit of %90 for nitrate in the MS and MSD. Associated samples, non-compliant analytes and required qualifications are noted in the following table.

MS/MSD ID	Analyte	% R	QC Limit	Affected Samples	Q Flag	Qual Code
IR86-GW31IW-06B	nitrate	86/81	90-110%	all samples +/-	J/UJ	MSL

SDG #E0424

The MS/MSD pair of sample IR86-AS428-GW05-06B analyzed for the IC fraction exhibited spike recoveries below the lower QC limit of %90 for sulfate in the MS and the MSD. Associated samples, non-compliant analytes and required qualifications are noted in the following table.

MS/MSD ID	Analyte	% R	QC Limit	Affected Samples	Q Flag	Qual Code
IR86-AS428-GW05-06B	sulfate	86.3/87.3	90-110%	IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B, IR86-GW03-06B, IR86-AS428-GW05-06B	J/UJ	MSL

SDG #E0622

The MS/MSD pair of sample IR86-GW24IW-06B analyzed for the IC fraction exhibited spike recoveries above the upper QC limit of %110 for chloride and nitrate. Associated samples, non-compliant analytes and required qualifications are noted in the following table.

MS/MSD ID	Analyte	% R	QC Limit	Affected Samples	Q Flag	Qual Code
IR86-GW24IW-06B	chloride	115/118	90-110%	all samples +	J+	MSH
	nitrate	112/124				

Field Duplicates

VOA

SDG# E0424

Qualifications were required for sample IR86-GW23IW-06B and field duplicate IR86-GW23IW-06BDUP due to non-comparable results. Compounds vinyl chloride (200% RPD), trans-1,2-dichloroethene (78% RPD), benzene (63% RPD) and 1,1-dichloroethene (70% RPD) were qualified as estimated (J/UJ), qualifier code: FD.

SDG# E0622

Sample IR86-GW30IW-06B and field duplicate sample IR86-GW30IW-06BDUP exhibited non-comparable results for 1,1-dichloroethene with 200%RPD and trans-1,2-dichloroethene with 40% RPD these compound results were qualified as estimated (J/UJ), qualifier code: FD.

Wet Chemistry

SDG# E0412

The field duplicate pair of sample IR86-GW16IW-06B exhibited an RPD greater than 100% (106%) for the analyte sulfate in the IC analysis. The reported results for sulfate in the field duplicate pair were qualified as estimated J with a qualifier code of FD.

Identification/Quantitation

VOA

SDG# E0412

A dilution was required for sample IR86-GW15IW-06B; therefore, the E-flagged compound results were not used in the initial analysis in favor of the corresponding D-flagged compound result in the dilution (qualifier code: DL).

SDG# E0424

A dilution was required for samples IR86-GW20IW-06B, IR86-GW29IW-06B, IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B and IR86-GW04IW-06BDUP; therefore, the E-flagged compound results were not used in the initial analysis

in favor of the corresponding D-flagged compound result in the dilution (qualifier code: DL).

SDG# E0622

A dilution was required for samples IR86-GW25IW-06B, IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW27IW-06B and IR86-GW10IW-06B; therefore, the E-flagged compound results were not used in the initial analysis in favor of the corresponding D-flagged compound result in the dilution (qualifier code: DL).

RSK-175

SDG# E0412

Sample IR86-GW11-06B required a dilution to accurately quantitate target compounds. All E-flagged results in the initial analysis of this sample are rejected in favor of the corresponding results reported in the dilution analysis with a qualifier code of DL.

SDG# E0622

Samples IR86-GW24IW-06B, IR86-GW30IW-06B, IR86-GW26IW-06B, and IR86-GW21IW-06B required dilutions to accurately quantitate target compounds. All E-flagged results in the initial analysis of these samples are rejected in favor of the corresponding result reported in the dilution analysis with a qualifier code of DL.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff

Laura Maschhoff
President

Jacqueline Cleveland

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

SDG# E0412

Sample ID	Compound	Results	Q-Flag	Qualifier Code
IR86-GW31IW-06B, IR86-GW31DW-06B, IR86-16IW-06B, IR86-GW16DW-06B, IR86-TB040506, IR86-GW32IW-06B, IR86-GW16DW-06BDUP, IR86-GW13-06B, IR86-FB040506, IR86-GW14IW-06B, IR86-GW05-06B	bromoform	+/-	J/UJ	CCH
IR86-GW16DW-06B, IR86-GW28IW-06B, IR86-GW15DW-06B	methylene chloride	+	CRQL	BL
IR86-GW15IW-06B	methylene chloride	+	U	BL
IR86-GW16IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW05-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW06IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	2-hexanone-d5			
	bromoform-d			
IR86-GW12IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-TB040606	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW11-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW15IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW15DW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW15IW-06B	all E-flagged compounds	+	R	DL
IR86-GW15IW-06BDL	all results except D-flagged compounds	+/-	R	DL

SDG# E0424

Sample ID	Compound	Results	Q-Flag	Qualifier Code
IR86-GW01-06B, IR86-GW04IW-06BDUP, IR86-TB040706, IR86-EB040706, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B, IR86-GW03-06B, IR860AS428-GW05-06B	trichlorofluoromethane	+/-	J/UJ	CCH
IR86-GW29IW-06B	all compounds associated with: 1,4-dichlorobenzene-d4	+/-	J/R	ISL
IR86-GW20IW-06B, IR86-GW02IW-06B, IR86-GW17IW-06B	methylene chloride	+	CRQL	BL

Summary of Data Qualifications

VOA

SDG# E0424

Sample ID	Compound	Results	Q-Flag	Qualifier Code
IR86-GW02IW-06B	2-butanone-d5	+/-	J/R	SSL
	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW29IW-06B	chloroethane-d5	+	J	SSH
	chloroform-d			
	1,2-dichloroethane-d4			
	benzene-d6			
	1,2-dichloropropane-d6			
	toluene-d8			
	1,1,2,2-tetrachloroethane-d2			
	1,2-dichlorobenzene-d4			
IR86-GW01-06B	benzene-d6	+/-	J/UJ	SSL
	trans-1,3-dichloropropene-d4			
	bromoform-d			
IR86-GW04IW-06B	2-butanone-d5	+/-	J/R	SSL
	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW08IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW07-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW23IW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW23IW-06BDUP	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW04IW-06BDUP	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR86-GW17DW-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
IR86-AS428-GW05-06B	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
IR86-GW23IW-06B, IR86-GW23IW-06BDUP	vinyl chloride, trans-1,2-dichloroethene, benzene, 1,1-dichloroethene	+/-	J/UJ	FD
IR86-GW20IW-06B, IR86-GW29IW-06B, IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B,IR86-GW04IW-06BDUP	all E-flagged compounds	+	R	DL
IR86-GW20IW-06BDL, IR86-GW29IW-06BDL, IR86-GW23IW-06BDL, IR86-GW04IW-06BDL, IR86-GW23IW-06BDUPDL, IR86-GW04IW-06BDUPDL	all results except D-flagged compounds	+/-	R	DL

Summary of Data Qualifications

VOA

SDG# E0622

Sample ID	Compound	Results	Q-Flag	Qualifier Code
all samples	dichlorodifluoromethane trichlorofluoromethane	+/-	J/UJ	CCH
IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW10IW-06B, IR86-EB051106, IR86-FB051106, IR86-GW34IW-06B, IR86-GW26IW-06B, IR86-TB051106	1,1,2-trichloro-1,2,2-trifluoroethene tetrachloroethene	+/-	J/UJ	CCH
IR86-GW25IW-06B	1,1-dichloroethene-d2	+	J	SSH
IR86-GW27IW-06B	2-butanone-d5	+/-	J/UJ	SSL
	trans-1,3-dichloropropene-d4	+/-	J/UJ	SSL
	bromoform-d			
IR-86-GW10IW-06B	chloroethane-d5	+	J	SSH
	1,1-dichloroethene-d2	+/-	J/R	SSL
	2-butanone-d5			
	1,2-dichloropropane-d6	+/-	J/UJ	SSL
	trans-1,3-dichloropropene-d4			
	bromoform-d			
IR86-TB051106	vinyl chloride-d3	+/-	J/UJ	SSL
IR86-GW21IW-06B	1,2-dichloropropane-d6	+/-	J/UJ	SSL
IR86-EB051106	1,2-dichloropropane-d6	+/-	J/UJ	SSL
IR86-GW34IW-06B	1,2-dichloropropane-d6	+/-	J/UJ	SSL
IR86-GW30IW-06B, IR86-GW30IW-06BDUP	1,1-dichloroethene trans-1,2-dichloroethene	+/-	J/UJ	FD
IR86-GW25IW-06B, IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW27IW-06B, IR86-GW10IW-06B	all E-flagged compounds	+	R	DL
IR86-GW25IW-06BDL, IR86-GW30IW-06BDL, IR86-GW30IW-06BDUPDL, IR86-GW21IW-06BDL, IR86-GW27IW-06BDL, IR86-GW10IW-06B	all results except D-flagged compounds	+/-	R	DL

RSK-175

SDG# E0412

Sample ID	Compound	Results	Q-Flag	Qual Code
IR86-GW11-06B	methane	+E	R	DL
IR86-GW11-06BDL	ethane ethene	+/-	R	DL

Summary of Data Qualifications

RSK-175

SDG# E0622

Sample ID	Compound	Results	Q-Flag	Qual Code
IR86-GW24IW-06B, IR86-GW30IW-06B, IR86-GW26IW-06B, IR86-GW21IW-06B	methane	+E	R	DL
IR86-GW24IW-06BDL, IR86-GW30IW-06BDL, IR86-GW26IW-06BDL, IR86-GW21IW-06BDL	ethane ethene	+/-	R	DL

Wet Chemistry Parameters

SDG # E0412

Sample ID	Analyte	Results	Q-Flag	Qual Code
IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B	Ferrous Fe	+/- H	J/UJ	HT
all samples	nitrogen as N (nitrate)	+/-	J/UJ	MSL
IR86-GW16IW-06B, IR86-GW16IW-06BDUP	sulfate	+	J	FD

SDG # E0424

Sample ID	Analyte	Results	Q-Flag	Qual Code
IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B	Ferrous Fe	+/- H	J/UJ	HT
IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B, IR86-GW03-06B, IR86-AS428-GW05-06B	sulfate	+/-	J/UJ	MSL

SDG # E0622

Sample ID	Analyte	Results	Q-Flag	Qual Code
IR86-GW09-06B, IR86-GW25IW-06B, IR86-GW34IW-06B, IR86-GW33DW-06B, IR86-GW24IW-06B, IR86-GW33DW-06BDUP, IR86-GW27IW-06B, IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW10IW-06B.	Ferrous Fe	+/- H	J/UJ	HT
all samples	chloride nitrogen as N (nitrate)	+	J	MSH

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
D	result value is based on dilution analysis result
NJ	analyte has been tentatively identified, estimated value
L	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K	analyte present, biased high

Method/Preparation Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 5X (10X for common laboratory contaminants) the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U	The sample result for the blank contaminant is greater than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.
RL	The sample result for the blank contaminant is less than the sample RL and is less than 5X (10X for common laboratory contaminants) the blank value.

General Abbreviations

RL	reporting limit
+	positive result
-	non-detect result

QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report

020

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW31IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-01F Date Received: 04/06/2006

Lab File ID: V2H3751.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	1.1	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

VM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW31IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-01F Date Received: 04/06/2006

Lab File ID: V2H3751.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	2.2	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.32	J
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

VM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW31IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-01F Date Received: 04/06/2006

Lab File ID: V2H3751.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

UM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW31DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-02F Date Received: 04/06/2006

Lab File ID: V2H3752.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

WM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW31DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-02F Date Received: 04/06/2006

Lab File ID: V2H3752.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW31DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-02F Date Received: 04/06/2006

Lab File ID: V2H3752.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LW 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-03F Date Received: 04/06/2006

Lab File ID: V2H3753.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	2.3	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.43	J
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-03F Date Received: 04/06/2006

Lab File ID: V2H3753.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	2.8		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,~~ACH~~ SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

1 correction LM062806

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW16IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-03F Date Received: 04/06/2006

Lab File ID: V2H3753.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

UM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-04F Date Received: 04/06/2006

Lab File ID: V2H3754.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	~~0.42~~ 0.50	~~J~~ U,B2L
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

VM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-04F Date Received: 04/06/2006

Lab File ID: V2H3754.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

VM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW16DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-04F Date Received: 04/06/2006

Lab File ID: V2H3754.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

VM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW32IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-05F Date Received: 04/06/2006

Lab File ID: V2H3758.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	6.5	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	1.0	
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW32IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-05F Date Received: 04/06/2006

Lab File ID: V2H3758.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	2.7	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U VJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW32IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-05F Date Received: 04/06/2006

Lab File ID: V2H3758.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-06F Date Received: 04/06/2006

Lab File ID: V2H3759.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.46	J
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-06F Date Received: 04/06/2006

Lab File ID: V2H3759.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW16DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-06F Date Received: 04/06/2006

Lab File ID: V2H3759.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW13

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-07F Date Received: 04/06/2006

Lab File ID: V2H3760.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW13

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-07F Date Received: 04/06/2006

Lab File ID: V2H3760.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UJ, CCH

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW14IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-08F Date Received: 04/06/2006

Lab File ID: V2H3762.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW14IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-08F Date Received: 04/06/2006

Lab File ID: V2H3762.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW14IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-08F Date Received: 04/06/2006

Lab File ID: V2H3762.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

FORM I LCV-TIC

OLC03.2

044

0080

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW05

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-09F Date Received: 04/06/2006

Lab File ID: V2H3763.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LW 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW06IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-10F Date Received: 04/06/2006

Lab File ID: V2H3781.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.69	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW06IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-10F Date Received: 04/06/2006

Lab File ID: V2H3781.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.57		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	~~U~~	UJ,SSL
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	~~U~~	UJ,SSL
124-48-1	Dibromochloromethane	0.50	~~U~~	↓
106-93-4	1,2-Dibromoethane	0.50	~~U~~	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB040506

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-11A Date Received: 04/06/2006

Lab File ID: V2H3757.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

FB040506

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-12A Date Received: 04/06/2006

Lab File ID: V2H3761.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.84	
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

FB040506

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-12A Date Received: 04/06/2006

Lab File ID: V2H3761.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	~~U~~ UJ,CCH
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UJ 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB040506

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-13A Date Received: 04/06/2006

Lab File ID: V2H3779.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EB040506

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-13A Date Received: 04/06/2006

Lab File ID: V2H3779.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

FORM I LCV-TIC

OLC03.2

059

0095

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB040606

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-14A Date Received: 04/07/2006

Lab File ID: V2H3789.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW28IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-15F Date Received: 04/07/2006

Lab File ID: V2H3786.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	~~0.33~~ 0.50	~~J~~ U,BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.40	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW28IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-15F Date Received: 04/07/2006

Lab File ID: V2H3786.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.39	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW22IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-16F Date Received: 04/07/2006

Lab File ID: V2H3787.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	6.9	
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.97	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW22IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-16F Date Received: 04/07/2006

Lab File ID: V2H3787.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW22IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-16F Date Received: 04/07/2006

Lab File ID: V2H3787.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW12IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-17F Date Received: 04/07/2006

Lab File ID: V2H3788.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW11

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-18F Date Received: 04/07/2006

Lab File ID: V2H3790.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW11

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-18F Date Received: 04/07/2006

Lab File ID: V2H3790.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW15IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-19F Date Received: 04/07/2006

Lab File ID: V2H3791.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 2

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.15	1.7	NJ
02	564-04-5	3-Pentanone, 2,2-dimethyl-	9.15	2.4	NJ

062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW15IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-19FDL Date Received: 04/07/2006

Lab File ID: V2H3894.D Date Analyzed: 04/10/2006

Purge Volume: 25.0 (ML) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	25	U
74-87-3	Chloromethane	25	U
75-01-4	Vinyl chloride	25	U
74-83-9	Bromomethane	25	U
75-00-3	Chloroethane	25	U
75-69-4	Trichlorofluoromethane	25	U
75-35-4	1,1-Dichloroethene	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	25	U
67-64-1	Acetone	250	U
75-15-0	Carbon disulfide	25	U
79-20-9	Methyl acetate	25	U
75-09-2	Methylene chloride	18	DJ
156-60-5	trans-1,2-Dichloroethene	19	DJ
1634-04-4	Methyl tert-butyl ether	25	U
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	490	D
78-93-3	2-Butanone	250	U
74-97-5	Bromochloromethane	25	U
67-66-3	Chloroform	36	D
71-55-6	1,1,1-Trichloroethane	25	U
110-82-7	Cyclohexane	25	U
56-23-5	Carbon tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U

R, DL

R, DL

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW15IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-19FDL Date Received: 04/07/2006

Lab File ID: V2H3894.D Date Analyzed: 04/10/2006

Purge Volume: 25.0 (ML) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	25	U
108-87-2	Methylcyclohexane	25	U
78-87-5	1,2-Dichloropropane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone	250	U
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
127-18-4	Tetrachloroethene	25	U
591-78-6	2-Hexanone	250	U
124-48-1	Dibromochloromethane	25	U
106-93-4	1,2-Dibromoethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
1330-20-7	Xylenes (Total)	25	U
100-42-5	Styrene	25	U
75-25-2	Bromoform	25	U
98-82-8	Isopropylbenzene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
541-73-1	1,3-Dichlorobenzene	25	U
106-46-7	1,4-Dichlorobenzene	25	U
95-50-1	1,2-Dichlorobenzene	25	U
96-12-8	1,2-Dibromo-3-chloropropane	25	U
120-82-1	1,2,4-Trichlorobenzene	25	U
87-61-6	1,2,3-Trichlorobenzene	25	U

RDL

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW15IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0412

Lab Sample ID: E0412-19FDL Date Received: 04/07/2006

Lab File ID: V2H3894.D Date Analyzed: 04/10/2006

Purge Volume: 25.0 (ML) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

FORM I LCV-TIC

OLC03.2

080

0116

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW15DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-20F Date Received: 04/07/2006

Lab File ID: V2H3792.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	~~0.47~~ 0.50	~~J~~ U,BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW15DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-20F Date Received: 04/07/2006

Lab File ID: V2H3792.D Date Analyzed: 04/07/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 06 28 06

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-04FMS Date Received: 04/06/2006

Lab File ID: V2H3755.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.48	J
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	4.5	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	5.2	
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-04FMS Date Received: 04/06/2006

Lab File ID: V2H3755.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	5.1	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.3	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	5.1	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW16DWMSD

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab Sample ID: E0412-04FMSD Date Received: 04/06/2006

Lab File ID: V2H3756.D Date Analyzed: 04/06/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	4.7	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.0	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	4.8	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW31IW
Lab ID: E0412-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	51		14	µg/L	1	04/08/2006 13:32	23067
Ethane	ND		26	µg/L	1	04/08/2006 13:32	23067
Ethene	ND		35	µg/L	1	04/08/2006 13:32	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW31DW
Lab ID: E0412-02

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 10:55

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 13:39	23067
Ethane	ND		26	µg/L	1	04/08/2006 13:39	23067
Ethene	ND		35	µg/L	1	04/08/2006 13:39	23067

JJC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW16IW
Lab ID: E0412-03

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 11:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	90		14	µg/L	1	04/08/2006 13:45	23067
Ethane	ND		26	µg/L	1	04/08/2006 13:45	23067
Ethene	ND		35	µg/L	1	04/08/2006 13:45	23067

JLC
6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW16DW
Lab ID: E0412-04

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 12:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 13:52	23067
Ethane	ND		26	µg/L	1	04/08/2006 13:52	23067
Ethene	ND		35	µg/L	1	04/08/2006 13:52	23067

JLC
6/5/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW32IW
Lab ID: E0412-05

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	76		14	µg/L	1	04/08/2006 16:10	23067
Ethane	ND		26	µg/L	1	04/08/2006 16:10	23067
Ethene	ND		35	µg/L	1	04/08/2006 16:10	23067

JLC
6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW13
Lab ID: E0412-07

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 13:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 14:21	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:21	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:21	23067

JAC 6/5/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW14IW
Lab ID: E0412-08

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	280		14	µg/L	1	04/08/2006 14:28	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:28	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:28	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW05
Lab ID: E0412-09

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 13:56

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	210		14	µg/L	1	04/08/2006 14:34	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:34	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:34	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW06IW
Lab ID: E0412-10

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:42

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	300		14	µg/L	1	04/08/2006 14:42	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:42	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:42	23067

JAC 61506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: TB040506
Lab ID: E0412-11

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 07:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 14:49	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:49	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:49	23067

JLC
6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: TB040606
Lab ID: E0412-14

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 07:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 14:58	23067
Ethane	ND		26	µg/L	1	04/08/2006 14:58	23067
Ethene	ND		35	µg/L	1	04/08/2006 14:58	23067

JLC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW28IW
Lab ID: E0412-15

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	88		14	µg/L	1	04/08/2006 15:08	23067
Ethane	ND		26	µg/L	1	04/08/2006 15:08	23067
Ethene	ND		35	µg/L	1	04/08/2006 15:08	23067

JC
6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW22IW
Lab ID: E0412-16

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	550		14	µg/L	1	04/08/2006 15:20	23067
Ethane	ND		26	µg/L	1	04/08/2006 15:20	23067
Ethene	ND		35	µg/L	1	04/08/2006 15:20	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW12IW
Lab ID: E0412-17

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 08:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	44		14	µg/L	1	04/08/2006 15:30	23067
Ethane	ND		26	µg/L	1	04/08/2006 15:30	23067
Ethene	ND		35	µg/L	1	04/08/2006 15:30	23067

JLC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW11
Lab ID: E0412-18

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	1200	~~E~~ R DL	14	µg/L	1	04/08/2006 15:40	23067
Ethane	ND		26	µg/L	1	04/08/2006 15:40	23067
Ethene	ND		35	µg/L	1	04/08/2006 15:40	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW11 DL
Lab ID: E0412-18

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	1200		27	µg/L	2	04/08/2006 16:16	23067
Ethane	~~ND~~	R DL	53	µg/L	2	04/08/2006 16:16	23067
Ethene	ND	R DL	70	µg/L	2	04/08/2006 16:16	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW15IW
Lab ID: E0412-19

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	110		14	µg/L	1	04/08/2006 15:56	23067
Ethane	ND		26	µg/L	1	04/08/2006 15:56	23067
Ethene	ND		35	µg/L	1	04/08/2006 15:56	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW15DW
Lab ID: E0412-20

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/08/2006 16:01	23067
Ethane	ND		26	µg/L	1	04/08/2006 16:01	23067
Ethene	ND		35	µg/L	1	04/08/2006 16:01	23067

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW31IW
Lab ID: E0412-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	7500		200	µg/L	1	04/11/2006 17:57	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	47		2.0	mg/L	1	04/06/2006 12:04	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 12:04	23028
Nitrogen, Nitrite (As N)	0.18		0.13	mg/L	1	04/06/2006 12:04	23028
Sulfate	700		50	mg/L	10	04/06/2006 16:21	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	490		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.3		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

SMC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW31DW
Lab ID: E0412-02

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 10:55

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	560		200	µg/L	1	04/11/2006 18:11	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	84		4.0	mg/L	2	04/06/2006 16:33	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 12:46	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 12:46	23028
Sulfate	81		5.0	mg/L	1	04/06/2006 12:46	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	240		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JLC 61506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW161W
Lab ID: E0412-03

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 11:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4700		200	µg/L	1	04/11/2006 18:14	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	36		2.0	mg/L	1	04/06/2006 12:59	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 12:59	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 12:59	23028
Sulfate	48		5.0	mg/L	1	04/06/2006 12:59	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	240		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.4		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JLC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW16DW
Lab ID: E0412-04

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 12:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	340		200	µg/L	1	04/11/2006 18:17	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	64		2.0	mg/L	1	04/06/2006 13:11	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 13:11	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 13:11	23028
Sulfate	30	J FD	5.0	mg/L	1	04/06/2006 13:11	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	240		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JLC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW32IW
Lab ID: E0412-05

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	1800		200	µg/L	1	04/11/2006 18:26	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	110		40	mg/L	20	04/06/2006 16:45	23028
Nitrogen, Nitrate (As N)	ND	UJ M3L	0.13	mg/L	1	04/06/2006 13:56	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 13:56	23028
Sulfate	1300		100	mg/L	20	04/06/2006 16:45	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	250		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.1		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

SJC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW16DWDUP
Lab ID: E0412-06

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 12:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	320		200	µg/L	1	04/11/2006 18:29	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	66		4.0	mg/L	2	04/06/2006 16:57	23028
Nitrogen, Nitrate (As N)	0.16	J MSL	0.13	mg/L	1	04/06/2006 14:09	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 14:09	23028
Sulfate	97	J FD	5.0	mg/L	1	04/06/2006 14:09	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	240		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JC 615000

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW13
Lab ID: E0412-07

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 13:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	570		200	µg/L	1	04/11/2006 18:32	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	14		2.0	mg/L	1	04/06/2006 14:21	23028
Nitrogen, Nitrate (As N)	1.2	J MDL	0.13	mg/L	1	04/06/2006 14:21	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 14:21	23028
Sulfate	52		5.0	mg/L	1	04/06/2006 14:21	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	40		20	mg/L CaCO3	1	04/10/2006 16:00	23106
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JLC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW14IW
Lab ID: E0412-08

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	7100		200	µg/L	1	04/11/2006 18:35	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	28		2.0	mg/L	1	04/06/2006 14:33	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 14:33	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 14:33	23028
Sulfate	24		5.0	mg/L	1	04/06/2006 14:33	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	420		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.7		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *27-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW05
Lab ID: E0412-09

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 13:56

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	380000		400	µg/L	2	04/12/2006 17:22	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	20		2.0	mg/L	1	04/06/2006 14:45	23028
Nitrogen, Nitrate (As N)	0.17	J MSC	0.13	mg/L	1	04/06/2006 14:45	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 14:45	23028
Sulfate	31		5.0	mg/L	1	04/06/2006 14:45	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	18		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	61		20	mg/L CaCO3	1	04/10/2006 16:00	23106
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.8		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	380		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JRC 6/15/06

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW06IW
Lab ID: E0412-10

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/05/06 14:42

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4200		200	µg/L	1	04/11/2006 18:41	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	24		2.0	mg/L	1	04/06/2006 14:57	23028
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/06/2006 14:57	23028
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/06/2006 14:57	23028
Sulfate	51		5.0	mg/L	1	04/06/2006 14:57	23028
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	ND		20	mg/L CaCO3	1	04/10/2006 16:00	23106
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.2		1.0	mg/L	1	04/06/2006 11:00	23034
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23034
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW28IW
Lab ID: E0412-15

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4000		200	µg/L	1	04/11/2006 18:44	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	91		4.0	mg/L	2	04/07/2006 15:23	23047
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.26	mg/L	2	04/07/2006 15:23	23047
Nitrogen, Nitrite (As N)	ND		0.26	mg/L	2	04/07/2006 15:23	23047
Sulfate	40		10	mg/L	2	04/07/2006 15:23	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	320		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	H UJ HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JPL 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW22IW
Lab ID: E0412-16

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3100		200	µg/L	1	04/11/2006 18:58	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	32		2.0	mg/L	1	04/07/2006 15:35	23047
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/07/2006 15:35	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 15:35	23047
Sulfate	7.9		5.0	mg/L	1	04/07/2006 15:35	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	290		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/5/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW12IW
Lab ID: E0412-17

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 08:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3400		200	µg/L	1	04/11/2006 19:01	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	15		2.0	mg/L	1	04/07/2006 15:47	23047
Nitrogen, Nitrate (As N)	ND	UJ MSL	0.13	mg/L	1	04/07/2006 15:47	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 15:47	23047
Sulfate	55		5.0	mg/L	1	04/07/2006 15:47	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	38		20	mg/L CaCO3	1	04/10/2006 16:00	23106
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	2.4	~~H~~ J HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 101506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW11
Lab ID: E0412-18

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	34000		200	µg/L	1	04/11/2006 19:04	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	12		2.0	mg/L	1	04/07/2006 15:59	23047
Nitrogen, Nitrate (As N)	0.21	J MSL	0.13	mg/L	1	04/07/2006 15:59	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 15:59	23047
Sulfate	13		5.0	mg/L	1	04/07/2006 15:59	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	12		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	360		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	34		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/15/06

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW151W
Lab ID: E0412-19

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 09:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3900		200	µg/L	1	04/11/2006 19:07	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	26		2.0	mg/L	1	04/07/2006 16:11	23047
Nitrogen, Nitrate (As N)	1.4	J MSL	0.13	mg/L	1	04/07/2006 16:11	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 16:11	23047
Sulfate	7.0		5.0	mg/L	1	04/07/2006 16:11	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	260		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.0	~~H~~ J HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW15DW
Lab ID: E0412-20

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	430		200	µg/L	1	04/11/2006 19:10	23097
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	26		2.0	mg/L	1	04/07/2006 16:23	23047
Nitrogen, Nitrate (As N)	0.20	J MSC	0.13	mg/L	1	04/07/2006 16:23	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 16:23	23047
Sulfate	14		5.0	mg/L	1	04/07/2006 16:23	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/10/2006 09:00	23100
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	190		20	mg/L CaCO3	1	04/10/2006 16:00	23107
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/11/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/11/2006 12:00	23136

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW20IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-01A Date Received: 04/07/2006

Lab File ID: V2H3814.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	~~0.43~~ 0.50	~~J~~ U,BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	11	
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.47	J

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW20IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-01A Date Received: 04/07/2006

Lab File ID: V2H3814.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	67	~~E~~ RDL
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

DM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW20IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-01A Date Received: 04/07/2006

Lab File ID: V2H3814.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 3

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown (10.75498)	10.75	0.70	J
02		Unknown (11.78907)	11.79	0.67	J
03		Unknown (12.10243)	12.10	0.50	J

UW 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW20IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-01ADL Date Received: 04/07/2006

Lab File ID: V2H3927.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 5.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	2.5	U
74-87-3	Chloromethane	2.5	U
75-01-4	Vinyl chloride	2.5	U
74-83-9	Bromomethane	2.5	U
75-00-3	Chloroethane	2.5	U
75-69-4	Trichlorofluoromethane	2.5	U
75-35-4	1,1-Dichloroethene	2.5	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.5	U
67-64-1	Acetone	25	U
75-15-0	Carbon disulfide	2.5	U
79-20-9	Methyl acetate	2.5	U
75-09-2	Methylene chloride	2.5	U
156-60-5	trans-1,2-Dichloroethene	2.5	U
1634-04-4	Methyl tert-butyl ether	2.5	U
75-34-3	1,1-Dichloroethane	2.5	U
156-59-2	cis-1,2-Dichloroethene	12	U
78-93-3	2-Butanone	25	U
74-97-5	Bromochloromethane	2.5	U
67-66-3	Chloroform	2.5	U
71-55-6	1,1,1-Trichloroethane	2.5	U
110-82-7	Cyclohexane	2.5	U
56-23-5	Carbon tetrachloride	2.5	U
71-43-2	Benzene	2.5	U
107-06-2	1,2-Dichloroethane	2.5	U

R, DL

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW20IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-01ADL Date Received: 04/07/2006

Lab File ID: V2H3927.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 5.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	78	~~D~~
108-87-2	Methylcyclohexane	2.5	~~U~~
78-87-5	1,2-Dichloropropane	2.5	U
75-27-4	Bromodichloromethane	2.5	U
10061-01-5	cis-1,3-Dichloropropene	2.5	U
108-10-1	4-Methyl-2-pentanone	25	U
108-88-3	Toluene	2.5	U
10061-02-6	trans-1,3-Dichloropropene	2.5	U
79-00-5	1,1,2-Trichloroethane	2.5	U
127-18-4	Tetrachloroethene	2.5	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	2.5	U
106-93-4	1,2-Dibromoethane	2.5	U
108-90-7	Chlorobenzene	2.5	U
100-41-4	Ethylbenzene	2.5	U
1330-20-7	Xylenes (Total)	2.5	U
100-42-5	Styrene	2.5	U
75-25-2	Bromoform	2.5	U
98-82-8	Isopropylbenzene	2.5	U
79-34-5	1,1,2,2-Tetrachloroethane	2.5	U
541-73-1	1,3-Dichlorobenzene	2.5	U
106-46-7	1,4-Dichlorobenzene	2.5	U
95-50-1	1,2-Dichlorobenzene	2.5	U
96-12-8	1,2-Dibromo-3-chloropropane	2.5	U
120-82-1	1,2,4-Trichlorobenzene	2.5	U
87-61-6	1,2,3-Trichlorobenzene	2.5	U

R.DL

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW20IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-01ADL Date Received: 04/07/2006

Lab File ID: V2H3927.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 5.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW08IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-02A Date Received: 04/07/2006

Lab File ID: V2H3815.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW08IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-02A Date Received: 04/07/2006

Lab File ID: V2H3815.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW08IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-02A Date Received: 04/07/2006

Lab File ID: V2H3815.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	11.79	0.51	J

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW07

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-03A Date Received: 04/07/2006

Lab File ID: V2H3816.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.48	J
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW07

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-03A Date Received: 04/07/2006

Lab File ID: V2H3816.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW07

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-03A Date Received: 04/07/2006

Lab File ID: V2H3816.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 30 KL 4/27/06

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	108-38-3	Benzene, 1,3-dimethyl-	10.88	1.2	NJ
02		Unknown (11.54837)	11.55	0.71	J
03		Unknown (12.72868)	12.73	0.65	J
04	496-11-7	Indane	13.25	3.5	NJ
05	95-13-6	Indene	13.50	1.7	NJ
06	1560-06-1	Benzene, 2-butenyl-	13.83	1.5	NJ
07		Unknown (14.37903)	14.38	0.58	J
08		Unknown (14.52527)	14.53	0.97	J
09	768-00-3	Benzene, (1-methyl-1-propenyl)	14.76	1.2	NJ
10	6682-71-9	1H-Indene, 2,3-dihydro-4,7-dim	15.16	0.86	NJ
11		Unknown (15.23555)	15.24	2.2	J
12	17059-48-2	1H-Indene, 2,3-dihydro-1,6-dim	15.27	2.6	NJ
13	40650-41-7	1H-Indene, 2,3-dihydro-1,1,5-t	15.39	1.3	NJ
14	91-20-3	Naphthalene	15.44	2.5	NJ
15	3877-19-8	Naphthalene, 1,2,3,4-tetrahydr	15.54	1.4	NJ
16	1559-81-5	Naphthalene, 1,2,3,4-tetrahydr	15.64	1.6	NJ
17		Unknown (15.70558)	15.71	0.71	J
18	17057-82-8	1H-Indene, 2,3-dihydro-1,2-dim	16.04	1.0	NJ
19		Unknown (16.18607)	16.19	0.93	J
20		Unknown (16.25918)	16.26	0.92	J
21		Unknown (16.32187)	16.32	0.54	J
22	2613-76-5	1H-Indene, 2,3-dihydro-1,1,3-t	16.42	2.2	NJ
23	4175-54-6	Naphthalene, 1,2,3,4-tetrahydr	16.58	1.6	NJ
24	827-52-1	Benzene, cyclohexyl-	16.67	1.3	NJ
25		Unknown (16.73967)	16.74	1.1	J
26		Unknown (16.83367)	16.83	1.6	J
27		Unknown (16.91723)	16.92	0.62	J
28		Unknown (17.01125)	17.01	0.85	J
29		Unknown (17.37683)	17.38	0.99	J
30		Unknown (17.71108)	17.71	0.55	J

KL 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW01

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-04A Date Received: 04/07/2006

Lab File ID: V2H3926.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	~~U~~ UJ,SSL
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW01

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-04A Date Received: 04/07/2006

Lab File ID: V2H3926.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW01

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-04A Date Received: 04/07/2006

Lab File ID: V2H3926.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW02IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-05A Date Received: 04/07/2006

Lab File ID: V2H3818.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	~~U~~	R,SSL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	~~0.37~~ 0.50	~~J~~	U,BL
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	~~U~~	R,SSL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW02IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-05A Date Received: 04/07/2006

Lab File ID: V2H3818.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW02IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-05A Date Received: 04/07/2006

Lab File ID: V2H3818.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW29IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-06A Date Received: 04/07/2006

Lab File ID: V2H3819.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	1.0		J,SSL
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	71	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.96		J,SSL
107-06-2	1,2-Dichloroethane	1.0		J,SSL

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW29IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-06A Date Received: 04/07/2006

Lab File ID: V2H3819.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	400	~~E~~	R,DL
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	U	
79-00-5	1,1,2-Trichloroethane	0.50	U	
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	U	
106-93-4	1,2-Dibromoethane	0.50	U	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	R,ISL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	~~U~~	R,ISL
106-46-7	1,4-Dichlorobenzene	0.50	~~U~~	
95-50-1	1,2-Dichlorobenzene	0.50	~~U~~	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	~~U~~	
120-82-1	1,2,4-Trichlorobenzene	0.50	~~U~~	
87-61-6	1,2,3-Trichlorobenzene	0.50	~~U~~	

MN 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW29IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-06A Date Received: 04/07/2006

Lab File ID: V2H3819.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW29IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-06ADL Date Received: 04/07/2006

Lab File ID: V2H3953.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 25.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	130	U
75-15-0	Carbon disulfide	13	U
79-20-9	Methyl acetate	13	U
75-09-2	Methylene chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-butyl ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	45	D
78-93-3	2-Butanone	130	U
74-97-5	Bromochloromethane	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

RDL

RDL

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW29IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-06ADL Date Received: 04/07/2006

Lab File ID: V2H3953.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 25.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	340	~~D~~
108-87-2	Methylcyclohexane	13	~~U~~ R,DL
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-pentanone	130	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	130	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylenes (Total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U
87-61-6	1,2,3-Trichlorobenzene	13	U

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW29IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-06ADL Date Received: 04/07/2006

Lab File ID: V2H3953.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 25.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-07A Date Received: 04/07/2006

Lab File ID: V2H3820.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	~~U~~	UJ,FD
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.92		J,FD
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	1.1		J,FD
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	85	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.4		J,FD
107-06-2	1,2-Dichloroethane	0.50	U	

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-07A Date Received: 04/07/2006

Lab File ID: V2H3820.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.67		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 04/29/06

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW23IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-07A Date Received: 04/07/2006

Lab File ID: V2H3820.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

UM 042906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-07ADL Date Received: 04/07/2006

Lab File ID: V2H3954.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	120	D
78-93-3	2-Butanone	50	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

R,DL

R,DL

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-07ADL Date Received: 04/07/2006

Lab File ID: V2H3954.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

R,DL

LM 062901

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW23IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-07ADL Date Received: 04/07/2006

Lab File ID: V2H3954.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

UM 062901

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-08A Date Received: 04/07/2006

Lab File ID: V2H3821.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	4.5		J,FD
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	1.9		J,FD
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	2.5		J,FD
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	160	E	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	2.7		J,FD
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-08A Date Received: 04/07/2006

Lab File ID: V2H3821.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.84		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062901

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW23IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-08A Date Received: 04/07/2006

Lab File ID: V2H3821.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	9.15	0.90	J

LM 06290

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-08ADL Date Received: 04/07/2006

Lab File ID: V2H3955.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	140	D
78-93-3	2-Butanone	50	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

R,DL

R,DL

VM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW23IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-08ADL Date Received: 04/07/2006

Lab File ID: V2H3955.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

RDL

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW23IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-08ADL Date Received: 04/07/2006

Lab File ID: V2H3955.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LMP 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB040606

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-09A Date Received: 04/07/2006

Lab File ID: V2H3822.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.58	
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB040606

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-09A Date Received: 04/07/2006

Lab File ID: V2H3822.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062306

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EB040606

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-09A Date Received: 04/07/2006

Lab File ID: V2H3822.D Date Analyzed: 04/08/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-10A Date Received: 04/08/2006

Lab File ID: V2H3932.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	U	
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U	
67-64-1	Acetone	5.0	~~U~~	R,SSL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	7.4		
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	30	~~E~~	R,DL
78-93-3	2-Butanone	5.0	~~U~~	R,SSL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.6		
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-10A Date Received: 04/08/2006

Lab File ID: V2H3932.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	1.4		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW04IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-10A Date Received: 04/08/2006

Lab File ID: V2H3932.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 7

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown (2.64867)	2.65	2.1	J
02		Unknown (2.89935)	2.90	1.0	J
03		Unknown (4.96752)	4.97	2.0	J
04		Unknown (8.47713)	8.48	0.78	J
05		Unknown (11.50627)	11.51	1.7	J
06		Unknown (11.74650)	11.75	0.57	J
07	496-11-7	Indane	13.21	1.6	NJ

LW 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-10ADL Date Received: 04/08/2006

Lab File ID: V2H3956.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon disulfide	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
1634-04-4	Methyl tert-butyl ether	8.4	D
75-34-3	1,1-Dichloroethane	1.0	~~U~~
156-59-2	cis-1,2-Dichloroethene	32	D
78-93-3	2-Butanone	10	~~U~~
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
110-82-7	Cyclohexane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.9	D
107-06-2	1,2-Dichloroethane	1.0	U

R,DL

R,DL

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-10ADL Date Received: 04/08/2006

Lab File ID: V2H3956.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	1.6	U
108-87-2	Methylcyclohexane	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (Total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

RDL

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW04IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-10ADL Date Received: 04/08/2006

Lab File ID: V2H3956.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 2

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown (4.96037)	4.96	2.4	J
02		Unknown (13.20168)	13.20	1.2	J

LW 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-11A Date Received: 04/08/2006

Lab File ID: V2H3933.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	8.2	
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	34	~~E~~ R,DL
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	1.8	
107-06-2	1,2-Dichloroethane	0.50	U

VM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-11A Date Received: 04/08/2006

Lab File ID: V2H3933.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	1.6		
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW04IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-11A Date Received: 04/08/2006

Lab File ID: V2H3933.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 5

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown (2.89193)	2.89	1.3	J
02		Unknown (5.69127)	5.69	0.55	J
03		Unknown (8.46972)	8.47	0.66	J
04		Unknown (11.50928)	11.51	0.83	J
05	496-11-7	Indane	13.20	1.6	NJ

WR 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-11ADL Date Received: 04/08/2006

Lab File ID: V2H3957.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon disulfide	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
1634-04-4	Methyl tert-butyl ether	8.4	D
75-34-3	1,1-Dichloroethane	1.0	~~U~~
156-59-2	cis-1,2-Dichloroethene	32	~~D~~
78-93-3	2-Butanone	10	~~U~~
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
110-82-7	Cyclohexane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.8	D
107-06-2	1,2-Dichloroethane	1.0	U

R,DL

R,DL

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW04IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-11ADL Date Received: 04/08/2006

Lab File ID: V2H3957.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	1.5	U
108-87-2	Methylcyclohexane	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (Total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

RDL

LM 06/29/06

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW04IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: .Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-11ADL Date Received: 04/08/2006

Lab File ID: V2H3957.D Date Analyzed: 04/12/2006

Purge Volume: 25.0 (ML) Dilution Factor: 2.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 5

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown (2.88938)	2.89	1.1	J
02		Unknown (3.87123)	3.87	1.0	J
03		Unknown (4.96798)	4.97	2.2	J
04		Unknown (8.46715)	8.47	1.5	J
05		Unknown (13.19885)	13.20	1.1	J

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB040706

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-12A Date Received: 04/08/2006

Lab File ID: V2H3934.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	2.4	
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	1.8	
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

UJ 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB040706

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-12A Date Received: 04/08/2006

Lab File ID: V2H3934.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.2	
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB040706

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-12A Date Received: 04/08/2006

Lab File ID: V2H3934.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	11.51	0.60	J

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB040706

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-13A Date Received: 04/08/2006

Lab File ID: V2H3935.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	5.9	
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.56	
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

US, CCH

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB040706

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-13A Date Received: 04/08/2006

Lab File ID: V2H3935.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LMM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: MITKEM CORPORATION Contract: EB040706

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-13A Date Received: 04/08/2006

Lab File ID: V2H3935.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14A Date Received: 04/08/2006

Lab File ID: V2H3936.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14A Date Received: 04/08/2006

Lab File ID: V2H3936.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 06/29/06

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW18DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-14A Date Received: 04/08/2006

Lab File ID: V2H3936.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW17IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-15A Date Received: 04/08/2006

Lab File ID: V2H3939.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	~~0.44~~ 0.50	~~J~~ U,BL
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW17IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-15A Date Received: 04/08/2006

Lab File ID: V2H3939.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW17IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-15A Date Received: 04/08/2006

Lab File ID: V2H3939.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	8.48	1.6	J

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW17DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-16A Date Received: 04/08/2006

Lab File ID: V2H3940.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW17DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-16A Date Received: 04/08/2006

Lab File ID: V2H3940.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	U	
106-93-4	1,2-Dibromoethane	0.50	U	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	U	
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW17DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-16A Date Received: 04/08/2006

Lab File ID: V2H3940.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW03

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-17A Date Received: 04/08/2006

Lab File ID: V2H3941.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW03

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-17A Date Received: 04/08/2006

Lab File ID: V2H3941.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW03

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-17A Date Received: 04/08/2006

Lab File ID: V2H3941.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

AS428GW05

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-18A Date Received: 04/08/2006

Lab File ID: V2H3942.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

UM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

AS428GW05

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-18A Date Received: 04/08/2006

Lab File ID: V2H3942.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	0.50	U	
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
'10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	U	
106-93-4	1,2-Dibromoethane	0.50	U	
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	U	
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

VM 062906

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

AS428GW05

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0424

Lab Sample ID: E0424-18A Date Received: 04/08/2006

Lab File ID: V2H3942.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14AMS Date Received: 04/08/2006

Lab File ID: V2H3937.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	3.9	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	5.0	
107-06-2	1,2-Dichloroethane	0.50	U

LM 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14AMS Date Received: 04/08/2006

Lab File ID: V2H3937.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	5.0	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	5.4	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	5.4	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

062906

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DWMSD

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14AMSD Date Received: 04/08/2006

Lab File ID: V2H3938.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	3.4	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	4.4	
107-06-2	1,2-Dichloroethane	0.50	U

LVT 062906

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW18DWMSD

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab Sample ID: E0424-14AMSD Date Received: 04/08/2006

Lab File ID: V2H3938.D Date Analyzed: 04/11/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	4.4	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	4.7	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	4.7	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UM 062906

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW20IW
Lab ID: E0424-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	130		14	µg/L	1	04/10/2006 11:45	23087
Ethane	ND		26	µg/L	1	04/10/2006 11:45	23087
Ethene	ND		35	µg/L	1	04/10/2006 11:45	23087

JAC 6/17/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW08IW
Lab ID: E0424-02

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 13:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	97		14	µg/L	1	04/10/2006 12:04	23087
Ethane	ND		27	µg/L	1	04/10/2006 12:04	23087
Ethene	ND		36	µg/L	1	04/10/2006 12:04	23087

JLC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW07
Lab ID: E0424-03

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 15:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	570		14	µg/L	1	04/10/2006 12:15	23087
Ethane	ND		26	µg/L	1	04/10/2006 12:15	23087
Ethene	ND		35	µg/L	1	04/10/2006 12:15	23087

JAC
6/2006

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW01
Lab ID: E0424-04

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 13:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	580		13	µg/L	1	04/10/2006 12:24	23087
Ethane	ND		26	µg/L	1	04/10/2006 12:24	23087
Ethene	ND		34	µg/L	1	04/10/2006 12:24	23087

JBC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW02IW
Lab ID: E0424-05

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 14:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	620		13	µg/L	1	04/10/2006 12:38	23087
Ethane	ND		26	µg/L	1	04/10/2006 12:38	23087
Ethene	ND		34	µg/L	1	04/10/2006 12:38	23087

JKC
61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW29IW
Lab ID: E0424-06

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 14:05

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	280		14	µg/L	1	04/10/2006 12:46	23087
Ethane	ND		26	µg/L	1	04/10/2006 12:46	23087
Ethene	ND		35	µg/L	1	04/10/2006 12:46	23087

JAC 61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW23IW
Lab ID: E0424-07

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 06:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	32		14	µg/L	1	04/10/2006 12:53	23087
Ethane	ND		26	µg/L	1	04/10/2006 12:53	23087
Ethene	ND		35	µg/L	1	04/10/2006 12:53	23087

JC 01706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW23IWDUP
Lab ID: E0424-08

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 06:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	18		14	µg/L	1	04/10/2006 13:19	23087
Ethane	ND		26	µg/L	1	04/10/2006 13:19	23087
Ethene	ND		35	µg/L	1	04/10/2006 13:19	23087

JLC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW04IW
Lab ID: E0424-10

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	590		14	µg/L	1	04/10/2006 14:12	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:12	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:12	23087

JAC 6/17/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW04IWDUP
Lab ID: E0424-11

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	620		14	µg/L	1	04/10/2006 14:19	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:19	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:19	23087

JAC 6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: TB040706
Lab ID: E0424-12

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 07:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/10/2006 14:28	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:28	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:28	23087

JAC 6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW18DW
Lab ID: E0424-14

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	18		14	µg/L	1	04/10/2006 14:36	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:36	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:36	23087

JAC 6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW17IW
Lab ID: E0424-15

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 09:20

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	170		14	µg/L	1	04/10/2006 14:42	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:42	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:42	23087

JAC 6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW17DW
Lab ID: E0424-16

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 11:25

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/10/2006 14:51	23087
Ethane	ND		26	µg/L	1	04/10/2006 14:51	23087
Ethene	ND		35	µg/L	1	04/10/2006 14:51	23087

JAC 6/1/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW03
Lab ID: E0424-17

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 12:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	04/10/2006 15:01	23087
Ethane	ND		26	µg/L	1	04/10/2006 15:01	23087
Ethene	ND		35	µg/L	1	04/10/2006 15:01	23087

JAC 61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *18-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: AS428GW05
Lab ID: E0424-18

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 12:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	600		14	µg/L	1	04/10/2006 15:11	23087
Ethane	ND		26	µg/L	1	04/10/2006 15:11	23087
Ethene	ND		35	µg/L	1	04/10/2006 15:11	23087

JAC 61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW20IW
Lab ID: E0424-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 11:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4900		200	µg/L	1	04/12/2006 17:40	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	22		2.0	mg/L	1	04/07/2006 16:59	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 16:59	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 16:59	23047
Sulfate	5.4	~~S MS~~	5.0	mg/L	1	04/07/2006 16:59	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	270		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.1		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

xicom
JAC
62806

JAC
61706

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW08IW
Lab ID: E0424-02

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 13:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	13000		200	µg/L	1	04/12/2006 18:05	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	24		2.0	mg/L	1	04/07/2006 17:36	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 17:36	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 17:36	23047
Sulfate	55	~~J MSE~~	5.0	mg/L	1	04/07/2006 17:36	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	390		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	4.8		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

x/com
JPC
62806

JPC
61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW07
Lab ID: E0424-03

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 15:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	38000		200	µg/L	1	04/12/2006 18:08	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	17		2.0	mg/L	1	04/07/2006 17:48	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 17:48	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 17:48	23047
Sulfate	81	J MSL	5.0	mg/L	1	04/07/2006 17:48	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	67		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	4.1		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	34		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

xlcm
JAC
628016

JAC
61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW01
Lab ID: E0424-04

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 13:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	76000		200	µg/L	1	04/12/2006 18:11	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	36		2.0	mg/L	1	04/07/2006 18:00	23047
Nitrogen, Nitrate (As N)	0.24		0.13	mg/L	1	04/07/2006 18:00	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 18:00	23047
Sulfate	38	~~J-MSL~~	5.0	mg/L	1	04/07/2006 18:00	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	23		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	120		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	4.3		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	72		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

X1cum
JAC
6/28/06

JAC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW02IW
Lab ID: E0424-05

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 14:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	7100		200	µg/L	1	04/12/2006 18:14	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	34		2.0	mg/L	1	04/07/2006 18:12	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 18:12	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 18:12	23047
Sulfate	5.9	~~S MSL~~	5.0	mg/L	1	04/07/2006 18:12	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	79		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.7		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

X/COM
JAC 6/28/06

JAC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW29IW
Lab ID: E0424-06

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 14:05

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4500		200	µg/L	1	04/12/2006 18:17	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	39		2.0	mg/L	1	04/07/2006 18:24	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 18:24	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 18:24	23047
Sulfate	42	~~J MSC~~	5.0	mg/L	1	04/07/2006 18:24	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	320		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	1.3		1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

x1 conf
JAC 6/28/06

JAC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW23IW
Lab ID: E0424-07

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 06:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	2200		200	µg/L	1	04/12/2006 18:20	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	19		2.0	mg/L	1	04/07/2006 19:00	23047
Nitrogen, Nitrate (As N)	0.38		0.13	mg/L	1	04/07/2006 19:00	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 19:00	23047
Sulfate	5.3	~~J MSL~~	5.0	mg/L	1	04/07/2006 19:00	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	210		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	H UJ HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

x1 com
JPC 62806

JPC
07706

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW23IWDUP
Lab ID: E0424-08

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/06/06 06:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	1000		200	µg/L	1	04/12/2006 18:23	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	19		2.0	mg/L	1	04/07/2006 19:12	23047
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/07/2006 19:12	23047
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/07/2006 19:12	23047
Sulfate	ND	~~UJ MSL~~	5.0	mg/L	1	04/07/2006 19:12	23047
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	220		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	04/07/2006 11:00	23058
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23058
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

xl com
JAC
62806

JAC
61706

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW04IW
Lab ID: E0424-10

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3300		200	µg/L	1	04/12/2006 18:26	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	21		2.0	mg/L	1	04/08/2006 13:09	23066
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/08/2006 13:09	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 13:09	23066
Sulfate	51	J MSL	5.0	mg/L	1	04/08/2006 13:09	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	30		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.1	~~H~~ J HT	1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JPC
6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW04IWDUP
Lab ID: E0424-11

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3300		200	µg/L	1	04/12/2006 18:29	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	21		2.0	mg/L	1	04/08/2006 13:22	23066
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/08/2006 13:22	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 13:22	23066
Sulfate	51	J MSL	5.0	mg/L	1	04/08/2006 13:22	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	30		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.1	~~H~~ J HT	1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JAC
6/1/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW18DW
Lab ID: E0424-14

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	ND		200	µg/L	1	04/12/2006 18:38	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	120		10	mg/L	5	04/08/2006 15:22	23066
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/08/2006 13:34	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 13:34	23066
Sulfate	28	J MSL	5.0	mg/L	1	04/08/2006 13:34	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	270		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JAC
6/17/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *29-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW17IW
Lab ID: E0424-15

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 09:20

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	5500		200	µg/L	1	04/12/2006 18:41	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	43		2.0	mg/L	1	04/08/2006 13:46	23066
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/08/2006 13:46	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 13:46	23066
Sulfate	5.6	J MSL	5.0	mg/L	1	04/08/2006 13:46	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	280		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JPC 10/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW17DW
Lab ID: E0424-16

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 11:25

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	480		200	µg/L	1	04/12/2006 18:44	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	150		10	mg/L	5	04/08/2006 15:34	23066
Nitrogen, Nitrate (As N)	0.28		0.13	mg/L	1	04/08/2006 13:58	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 13:58	23066
Sulfate	24	J MSL	5.0	mg/L	1	04/08/2006 13:58	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	270		20	mg/L CaCO3	1	04/12/2006 12:00	23145
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JAC 6/7/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW03
Lab ID: E0424-17

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 12:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	430		200	µg/L	1	04/12/2006 18:47	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	34		2.0	mg/L	1	04/08/2006 14:10	23066
Nitrogen, Nitrate (As N)	0.16		0.13	mg/L	1	04/08/2006 14:10	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 14:10	23066
Sulfate	36	J MSL	5.0	mg/L	1	04/08/2006 14:10	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	ND		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JBC
01 TOC

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *26-Apr-06*

Client: CH2M Hill, Inc.
Client Sample ID: AS428GW05
Lab ID: E0424-18

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 04/07/06 12:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	5300		200	µg/L	1	04/12/2006 18:50	23120
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	14		2.0	mg/L	1	04/08/2006 14:46	23066
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	04/08/2006 14:46	23066
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	04/08/2006 14:46	23066
Sulfate	12	J MSL	5.0	mg/L	1	04/08/2006 14:46	23066
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	16		10	mg/L	1	04/11/2006 09:25	23114
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	32		20	mg/L CaCO3	1	04/12/2006 12:00	23144
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.3		1.0	mg/L	1	04/08/2006 11:00	23068
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	04/12/2006 14:00	23068
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	04/12/2006 11:00	23141

JLC 6/1/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW09

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-01F Date Received: 05/12/2006

Lab File ID: V2H4803.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	~~U~~ UJ, CCH
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ, CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW09

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-01F Date Received: 05/12/2006

Lab File ID: V2H4803.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

MM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW09

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-01F Date Received: 05/12/2006

Lab File ID: V2H4803.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW25IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-02F Date Received: 05/12/2006

Lab File ID: V2H4804.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	4.2		J,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	1.4		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	59	~~E~~	R,DL
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	190	~~E~~	R,DL
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	~~U~~ U	~~UJ,SSH~~ UM
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	7.8		
156-59-2	cis-1,2-Dichloroethene	26	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

1 correction
UM 062806

UM
062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW25IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-02F Date Received: 05/12/2006

Lab File ID: V2H4804.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	40	~~E~~ R,DL
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.91	
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.39	J
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	10	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW25IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-02F Date Received: 05/12/2006

Lab File ID: V2H4804.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 30

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.11	50	NJ
02	103-65-1	Benzene, propyl-	11.78	1.0	NJ
03	611-14-3	Benzene, 1-ethyl-2-methyl- (11	11.92	0.85	NJ
04	526-73-8	Benzene, 1,2,3-trimethyl- (11.	11.99	2.6	NJ
05	611-14-3	Benzene, 1-ethyl-2-methyl- (12	12.24	3.2	NJ
06	526-73-8	Benzene, 1,2,3-trimethyl- (12.	12.44	3.1	NJ
07		Unknown (13.17107)	13.17	4.7	J
08	135-01-3	Benzene, 1,2-diethyl-	13.41	0.98	NJ
09	1074-55-1	Benzene, 1-methyl-4-propyl-	13.49	1.3	NJ
10	1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	13.59	1.6	NJ
11	95-93-2	Benzene, 1,2,4,5-tetramethyl-	13.62	0.69	NJ
12	874-41-9	Benzene, 1-ethyl-2,4-dimethyl-	13.70	3.2	NJ
13	824-90-8	1-Phenyl-1-butene	13.75	0.97	NJ
14	7525-62-4	Benzene, 1-ethenyl-3-ethyl-	13.83	3.3	NJ
15	4912-92-9	1H-Indene, 2,3-dihydro-1,1-dim	14.03	0.63	NJ
16	488-23-3	Benzene, 1,2,3,4-tetramethyl-	14.14	2.3	NJ
17		Unknown (14.29675)	14.30	0.71	J
18	824-22-6	1H-Indene, 2,3-dihydro-4-methy	14.50	1.7	NJ
19		Unknown (14.66515)	14.67	8.6	J
20	119-64-2	Naphthalene, 1,2,3,4-tetrahydr	14.86	3.3	NJ
21	6682-71-9	1H-Indene, 2,3-dihydro-4,7-dim	15.02	0.67	NJ
22		Unknown (15.08472)	15.08	1.6	J
23		Unknown (15.16660)	15.17	0.86	J
24	17059-48-2	1H-Indene, 2,3-dihydro-1,6-dim	15.20	1.3	NJ
25	275-51-4	Azulene	15.36	6.5	NJ
26		Unknown (15.56570)	15.57	0.91	J
27	2809-64-5	Naphthalene, 1,2,3,4-tetrahydr	15.99	1.1	NJ
28	1680-51-9	Naphthalene, 1,2,3,4-tetrahydr	16.33	0.66	NJ
29	90-12-0	Naphthalene, 1-methyl-	16.55	1.5	NJ
30	91-57-6	Naphthalene, 2-methyl-	16.75	1.3	NJ

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW25IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-02FDL Date Received: 05/12/2006

Lab File ID: V2H4842.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	~~U~~
75-35-4	1,1-Dichloroethene	31	~~D~~
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	110	~~D~~
67-64-1	Acetone	50	~~U~~
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	4.7	~~BJ~~
156-59-2	cis-1,2-Dichloroethene	15	~~D~~
78-93-3	2-Butanone	50	~~U~~
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

R, DL

R, DL

R, DL

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW25IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-02FDL Date Received: 05/12/2006

Lab File ID: V2H4842.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	24	~~D~~
108-87-2	Methylcyclohexane	5.0	~~U~~
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	7.2	D
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

R, DL

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW25IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-02FDL Date Received: 05/12/2006

Lab File ID: V2H4842.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.12	29	NJD

VM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW34IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-03F Date Received: 05/12/2006

Lab File ID: V2H4840.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	1.7		
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	~~U~~	UJ,SSL
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

VP 06/28/06

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW34IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-03F Date Received: 05/12/2006

Lab File ID: V2H4840.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	8.8	
108-87-2	Methylcyclohexane	0.50	~~U~~ UJ, SSL
78-87-5	1,2-Dichloropropane	0.50	~~U~~
75-27-4	Bromodichloromethane	0.50	~~U~~
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~ UJ, CCH
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UJ 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW34IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-03F Date Received: 05/12/2006

Lab File ID: V2H4840.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW33DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-04F Date Received: 05/12/2006

Lab File ID: V2H4806.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	~~U~~ UJ,CCH
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.32	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

VM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW33DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-04F Date Received: 05/12/2006

Lab File ID: V2H4806.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.34	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW33DW

b Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-04F Date Received: 05/12/2006

Lab File ID: V2H4806.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

FORM I LCV-TIC OLC03.2

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW19DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-05F Date Received: 05/12/2006

Lab File ID: V2H4807.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	~~U~~ UJ,CCH
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW19DW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-05F Date Received: 05/12/2006

Lab File ID: V2H4807.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW19DW

b Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-05F Date Received: 05/12/2006

Lab File ID: V2H4807.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW24IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-06F Date Received: 05/12/2006

Lab File ID: V2H4808.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	~~U~~ UJ,CCH
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.45	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	2.1	
107-06-2	1,2-Dichloroethane	0.50	U

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW24IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-06F Date Received: 05/12/2006

Lab File ID: V2H4808.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.39	J
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW24IW

b Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-06F Date Received: 05/12/2006

Lab File ID: V2H4808.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW33DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-07F Date Received: 05/12/2006

Lab File ID: V2H4811.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	~~U~~ UJ,CCH
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	~~U~~ UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW33DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-07F Date Received: 05/12/2006

Lab File ID: V2H4811.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.32	J
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW33DWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-07F Date Received: 05/12/2006

Lab File ID: V2H4811.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

VM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW27IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-08F Date Received: 05/12/2006

Lab File ID: V2H4812.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	3.2		J,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	12		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	17		
67-64-1	Acetone	5.0	~~U~~	UJ,SSL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.68		
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	100	~~E~~	R,DL
78-93-3	2-Butanone	5.0	~~U~~	UJ,SSL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.4		
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW27IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-08F Date Received: 05/12/2006

Lab File ID: V2H4812.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	130	~~E~~	R,DL
108-87-2	Methylcyclohexane	0.50	U	
78-87-5	1,2-Dichloropropane	0.50	U	
75-27-4	Bromodichloromethane	0.50	U	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	0.50	U	
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	0.50	U	
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.50	U	
1330-20-7	Xylenes (Total)	0.50	U	
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW27IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-08F Date Received: 05/12/2006

Lab File ID: V2H4812.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 24

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.10	20	NJ
02		Unknown (3.43832)	3.44	0.83	J
03		Unknown (6.91770)	6.92	2.2	J
04		Unknown (6.97910)	6.98	2.0	J
05		Unknown (7.07120)	7.07	3.9	J
06		Unknown (9.07695)	9.08	3.3	J
07		Unknown (11.35902)	11.36	0.85	J
08	637-50-3	Benzene, 1-propenyl-	13.17	6.9	NJ
09	1074-55-1	Benzene, 1-methyl-4-propyl-	13.49	1.8	NJ
10	1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	13.59	2.9	NJ
11	527-84-4	Benzene, 1-methyl-2-(1-methyle	13.62	1.3	NJ
12	535-77-3	Benzene, 1-methyl-3-(1-methyle	13.70	9.6	NJ
13	824-63-5	1H-Indene, 2,3-dihydro-2-methy	13.75	0.70	NJ
14		Unknown (13.83552)	13.84	2.8	J
15	488-23-3	Benzene, 1,2,3,4-tetramethyl-	14.15	12	NJ
16	488-23-3	Benzene, 1,2,3,4-tetramethyl-	14.20	14	NJ
17	1595-16-0	Benzene, 1-methyl-4-(1-methylp	14.30	1.0	NJ
18	874-35-1	1H-Indene, 2,3-dihydro-5-methy	14.50	3.3	NJ
19		Unknown (14.62350)	14.62	1.0	J
20	3454-07-7	Benzene, 1-ethenyl-4-ethyl-	14.67	9.0	NJ
21		Unknown (14.78723)	14.79	0.69	J
22	700-12-9	Benzene, pentamethyl-	15.08	3.2	NJ
23		Unknown (15.21703)	15.22	1.2	J
24	91-20-3	Naphthalene	15.36	3.5	NJ

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW27IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-08FDL Date Received: 05/12/2006

Lab File ID: V2H4945.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	14	D
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	12	D
67-64-1	Acetone	50	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	98	D
78-93-3	2-Butanone	50	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

R,DL

R,DL

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW27IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-08FDL Date Received: 05/12/2006

Lab File ID: V2H4945.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	160	~~D~~
108-87-2	Methylcyclohexane	5.0	~~U~~ R,DL
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

UM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW27IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-08FDL Date Received: 05/12/2006

Lab File ID: V2H4945.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 9

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	16	NJD
02		Unknown (6.11050)	6.11	12	JD
03		Unknown (7.43062)	7.43	6.0	JD
04		Unknown (7.57388)	7.57	19	JD
05		Unknown (13.20230)	13.20	5.8	JD
06	2870-04-4	Benzene, 2-ethyl-1,3-dimethyl-	13.73	8.4	NJD
07	527-84-4	Benzene, 1-methyl-2-(1-methyle	14.17	11	NJD
08	95-93-2	Benzene, 1,2,4,5-tetramethyl-	14.24	13	NJD
09	824-22-6	1H-Indene, 2,3-dihydro-4-methy	14.71	6.9	NJD

LM 002806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-09F Date Received: 05/12/2006

Lab File ID: V2H4833.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	2.7		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.77		J,FD
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	7.0		J,FD
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	100	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	2.1		
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-09F Date Received: 05/12/2006

Lab File ID: V2H4833.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	18	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~ UJ,CCH
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW30IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-09F Date Received: 05/12/2006

Lab File ID: V2H4833.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	20	NJ

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-09FDL Date Received: 05/12/2006

Lab File ID: V2H4845.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	6.8	D
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	~~U~~
156-59-2	cis-1,2-Dichloroethene	110	~~D~~
78-93-3	2-Butanone	50	~~U~~
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

RDL

RDL

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-09FDL Date Received: 05/12/2006

Lab File ID: V2H4845.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	16	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

R,DL

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW30IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-09FDL Date Received: 05/12/2006

Lab File ID: V2H4845.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	3.12	19	JD

UM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-10F Date Received: 05/12/2006

Lab File ID: V2H4834.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	1.4		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	~~U~~	UJ,FD
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	5.6		J,FD
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	84	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.6		
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-10F Date Received: 05/12/2006

Lab File ID: V2H4834.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	17	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~ UJ,CCH
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW30IWDUP

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-10F Date Received: 05/12/2006

Lab File ID: V2H4834.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	15	NJ

LM 06/28/06

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-10FDL Date Received: 05/12/2006

Lab File ID: V2H4846.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 8.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	4.0	U
74-87-3	Chloromethane	4.0	U
75-01-4	Vinyl chloride	4.0	U
74-83-9	Bromomethane	4.0	U
75-00-3	Chloroethane	4.0	U
75-69-4	Trichlorofluoromethane	4.0	U
75-35-4	1,1-Dichloroethene	4.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.0	U
67-64-1	Acetone	40	U
75-15-0	Carbon disulfide	4.0	U
79-20-9	Methyl acetate	4.0	U
75-09-2	Methylene chloride	4.0	U
156-60-5	trans-1,2-Dichloroethene	4.8	D
1634-04-4	Methyl tert-butyl ether	4.0	U
75-34-3	1,1-Dichloroethane	4.0	U
156-59-2	cis-1,2-Dichloroethene	73	D
78-93-3	2-Butanone	40	U
74-97-5	Bromochloromethane	4.0	U
67-66-3	Chloroform	4.0	U
71-55-6	1,1,1-Trichloroethane	4.0	U
110-82-7	Cyclohexane	4.0	U
56-23-5	Carbon tetrachloride	4.0	U
71-43-2	Benzene	4.0	U
107-06-2	1,2-Dichloroethane	4.0	U

R,DL

R,DL

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW30IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-10FDL Date Received: 05/12/2006

Lab File ID: V2H4846.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 8.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	13	
108-87-2	Methylcyclohexane	4.0	U
78-87-5	1,2-Dichloropropane	4.0	U
75-27-4	Bromodichloromethane	4.0	U
10061-01-5	cis-1,3-Dichloropropene	4.0	U
108-10-1	4-Methyl-2-pentanone	40	U
108-88-3	Toluene	4.0	U
10061-02-6	trans-1,3-Dichloropropene	4.0	U
79-00-5	1,1,2-Trichloroethane	4.0	U
127-18-4	Tetrachloroethene	4.0	U
591-78-6	2-Hexanone	40	U
124-48-1	Dibromochloromethane	4.0	U
106-93-4	1,2-Dibromoethane	4.0	U
108-90-7	Chlorobenzene	4.0	U
100-41-4	Ethylbenzene	4.0	U
1330-20-7	Xylenes (Total)	4.0	U
100-42-5	Styrene	4.0	U
75-25-2	Bromoform	4.0	U
98-82-8	Isopropylbenzene	4.0	U
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U
541-73-1	1,3-Dichlorobenzene	4.0	U
106-46-7	1,4-Dichlorobenzene	4.0	U
95-50-1	1,2-Dichlorobenzene	4.0	U
96-12-8	1,2-Dibromo-3-chloropropane	4.0	U
120-82-1	1,2,4-Trichlorobenzene	4.0	U
87-61-6	1,2,3-Trichlorobenzene	4.0	U

R, DL

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW30IWDUPDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-10FDL Date Received: 05/12/2006

Lab File ID: V2H4846.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 8.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.12	13	NJD

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW21IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-11F Date Received: 05/12/2006

Lab File ID: V2H4835.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	12		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	3.9		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	39	~~E~~	R,DL
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.41	J	
156-59-2	cis-1,2-Dichloroethene	140	~~E~~	R,DL
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	~~U~~	UJ,SSL
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.8		
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW21IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-11F Date Received: 05/12/2006

Lab File ID: V2H4835.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	42	~~E~~
108-87-2	Methylcyclohexane	0.50	~~U~~
78-87-5	1,2-Dichloropropane	0.50	~~U~~
75-27-4	Bromodichloromethane	0.50	~~U~~
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

R, DL
UJ, SSL

UJ, CCH

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW21IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-11F Date Received: 05/12/2006

Lab File ID: V2H4835.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	13	NJ

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW21IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-11FDL Date Received: 05/12/2006

Lab File ID: V2H4847.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	10	D
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	50	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	36	D
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	160	D
78-93-3	2-Butanone	50	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U

R,DL

R,DL
R,DL

R,DL

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW21IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-11FDL Date Received: 05/12/2006

Lab File ID: V2H4847.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	39	D
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylenes (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

R, DL

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW21IWDL

b Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-11FDL Date Received: 05/12/2006

Lab File ID: V2H4847.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01		Unknown	3.12	12	JD

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW10IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-12F Date Received: 05/12/2006

Lab File ID: V2H4836.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	54	~~E~~	R,DL
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	21		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	U	
75-35-4	1,1-Dichloroethene	2.9		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	400	~~E~~	R,DL
67-64-1	Acetone	74		J,SSL
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	1.1		J,SSL
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	2.5		
156-59-2	cis-1,2-Dichloroethene	51	~~E~~	R,DL
78-93-3	2-Butanone	5.0	~~U~~	R,SSL
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	~~U~~	UJ,SSL
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	1.9		
107-06-2	1,2-Dichloroethane	0.50	U	

UM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW10IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-12F Date Received: 05/12/2006

Lab File ID: V2H4836.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
79-01-6	Trichloroethene	46	~~E~~	R,DL
108-87-2	Methylcyclohexane	0.50	~~U~~	UJ,SSL
78-87-5	1,2-Dichloropropane	0.50	~~U~~	
75-27-4	Bromodichloromethane	0.50	~~U~~	
10061-01-5	cis-1,3-Dichloropropene	0.50	~~U~~	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	1.8		
10061-02-6	trans-1,3-Dichloropropene	0.50	~~U~~	UJ,SSL
79-00-5	1,1,2-Trichloroethane	0.50	~~U~~	UJ,SSL
127-18-4	Tetrachloroethene	85	~~E~~	R,DL
591-78-6	2-Hexanone	5.0	U	
124-48-1	Dibromochloromethane	0.50	~~U~~	UJ,SSL
106-93-4	1,2-Dibromoethane	0.50	~~U~~	UJ,SSL
108-90-7	Chlorobenzene	0.50	U	
100-41-4	Ethylbenzene	0.38	J	
1330-20-7	Xylenes (Total)	0.76		
100-42-5	Styrene	0.50	U	
75-25-2	Bromoform	0.50	~~U~~	UJ,SSL
98-82-8	Isopropylbenzene	0.50	U	
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	
541-73-1	1,3-Dichlorobenzene	0.50	U	
106-46-7	1,4-Dichlorobenzene	0.50	U	
95-50-1	1,2-Dichlorobenzene	0.50	U	
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U	
120-82-1	1,2,4-Trichlorobenzene	0.50	U	
87-61-6	1,2,3-Trichlorobenzene	0.50	U	

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW10IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-12F Date Received: 05/12/2006

Lab File ID: V2H4836.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 8

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	359-11-5	Ethene, trifluoro-	1.70	41	NJ
02	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	150	NJ
03	108-67-8	Benzene, 1,3,5-trimethyl-	12.04	0.59	NJ
04	526-73-8	Benzene, 1,2,3-trimethyl-	12.48	0.52	NJ
05	496-11-7	Indane	13.20	1.2	NJ
06	95-93-2	Benzene, 1,2,4,5-tetramethyl-	14.24	0.59	NJ
07		Unknown (14.70613)	14.71	0.75	J
08	275-51-4	Azulene	15.39	0.65	NJ

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW10IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-12FDL Date Received: 05/12/2006

Lab File ID: V2H4946.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 40.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	47	~~D~~
74-87-3	Chloromethane	20	~~U~~ R,DL
75-01-4	Vinyl chloride	21	D
74-83-9	Bromomethane	20	U
75-00-3	Chloroethane	20	U
75-69-4	Trichlorofluoromethane	20	U
75-35-4	1,1-Dichloroethene	20	~~U~~
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	510	~~D~~
67-64-1	Acetone	200	~~U~~ R,DL
75-15-0	Carbon disulfide	20	U
79-20-9	Methyl acetate	20	U
75-09-2	Methylene chloride	20	U
156-60-5	trans-1,2-Dichloroethene	20	U
1634-04-4	Methyl tert-butyl ether	20	U
75-34-3	1,1-Dichloroethane	20	~~U~~
156-59-2	cis-1,2-Dichloroethene	47	~~D~~
78-93-3	2-Butanone	200	~~U~~ R,DL
74-97-5	Bromochloromethane	20	U
67-66-3	Chloroform	20	U
71-55-6	1,1,1-Trichloroethane	20	U
110-82-7	Cyclohexane	20	U
56-23-5	Carbon tetrachloride	20	U
71-43-2	Benzene	20	U
107-06-2	1,2-Dichloroethane	20	U

WM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW10IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-12FDL Date Received: 05/12/2006

Lab File ID: V2H4946.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 40.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	39	D
108-87-2	Methylcyclohexane	20	~~U~~ R,DL
78-87-5	1,2-Dichloropropane	20	U
75-27-4	Bromodichloromethane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
108-10-1	4-Methyl-2-pentanone	200	U
108-88-3	Toluene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
79-00-5	1,1,2-Trichloroethane	20	~~U~~
127-18-4	Tetrachloroethene	64	D
591-78-6	2-Hexanone	200	~~U~~ R,DL
124-48-1	Dibromochloromethane	20	U
106-93-4	1,2-Dibromoethane	20	U
108-90-7	Chlorobenzene	20	U
100-41-4	Ethylbenzene	20	U
1330-20-7	Xylenes (Total)	20	U
100-42-5	Styrene	20	U
75-25-2	Bromoform	20	U
98-82-8	Isopropylbenzene	20	U
79-34-5	1,1,2,2-Tetrachloroethane	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
95-50-1	1,2-Dichlorobenzene	20	U
96-12-8	1,2-Dibromo-3-chloropropane	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
87-61-6	1,2,3-Trichlorobenzene	20	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW10IWDL

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-12FDL Date Received: 05/12/2006

Lab File ID: V2H4946.D Date Analyzed: 05/19/2006

Purge Volume: 25.0 (ML) Dilution Factor: 40.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q
01	354-23-4	Ethane, 1,2-dichloro-1,1,2-tri	3.13	110	NJD

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW26IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-13F Date Received: 05/12/2006

Lab File ID: V2H4841.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	1.1		
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	0.50	U	
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	2.8		
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.31	J	
107-06-2	1,2-Dichloroethane	0.50	U	

VM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW26IW

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-13F Date Received: 05/12/2006

Lab File ID: V2H4841.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~ UJ,CCH
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW26IW

b Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-13F Date Received: 05/12/2006

Lab File ID: V2H4841.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-14A Date Received: 05/12/2006

Lab File ID: V2H4838.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	6.6		
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	~~U~~	UJ,SSL
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

LPN 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

EB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-14A Date Received: 05/12/2006

Lab File ID: V2H4838.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	~~U~~
78-87-5	1,2-Dichloropropane	0.50	~~U~~
75-27-4	Bromodichloromethane	0.50	~~U~~
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

UJ, SSL

UJ, CCH

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-14A Date Received: 05/12/2006

Lab File ID: V2H4838.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

FB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-15A Date Received: 05/12/2006

Lab File ID: V2H4839.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	U	
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	6.7		
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

FB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-15A Date Received: 05/12/2006

Lab File ID: V2H4839.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~ UJ,CCH
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-15A Date Received: 05/12/2006

Lab File ID: V2H4839.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-16B Date Received: 05/12/2006

Lab File ID: V2H4844.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q	
75-71-8	Dichlorodifluoromethane	0.50	~~U~~	UJ,CCH
74-87-3	Chloromethane	0.50	U	
75-01-4	Vinyl chloride	0.50	~~U~~	UJ,SSL
74-83-9	Bromomethane	0.50	U	
75-00-3	Chloroethane	0.50	U	
75-69-4	Trichlorofluoromethane	0.50	~~U~~	UJ,CCH
75-35-4	1,1-Dichloroethene	0.50	U	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	~~U~~	UJ,CCH
67-64-1	Acetone	5.0	U	
75-15-0	Carbon disulfide	0.50	U	
79-20-9	Methyl acetate	0.50	U	
75-09-2	Methylene chloride	6.7		
156-60-5	trans-1,2-Dichloroethene	0.50	U	
1634-04-4	Methyl tert-butyl ether	0.50	U	
75-34-3	1,1-Dichloroethane	0.50	U	
156-59-2	cis-1,2-Dichloroethene	0.50	U	
78-93-3	2-Butanone	5.0	U	
74-97-5	Bromochloromethane	0.50	U	
67-66-3	Chloroform	0.50	U	
71-55-6	1,1,1-Trichloroethane	0.50	U	
110-82-7	Cyclohexane	0.50	U	
56-23-5	Carbon tetrachloride	0.50	U	
71-43-2	Benzene	0.50	U	
107-06-2	1,2-Dichloroethane	0.50	U	

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

TB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-16B Date Received: 05/12/2006

Lab File ID: V2H4844.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	~~U~~
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

WJ.CCH

UM 062806

1LCF

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB051106

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No _____ SDG No.: ME0622

Lab Sample ID: E0622-16B Date Received: 05/12/2006

Lab File ID: V2H4844.D Date Analyzed: 05/16/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (UG/L)	Q

LM 062806

1LCA

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW24IWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-06FMS Date Received: 05/12/2006

Lab File ID: V2H4809.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	4.3	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.38	J
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	6.5	
107-06-2	1,2-Dichloroethane	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW24IWMS

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-06FMS Date Received: 05/12/2006

Lab File ID: V2H4809.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	4.5	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	4.6	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	4.7	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

1LCB

LOW CONCENTRATION WATER VOLATILE ORGANICS ANALYSIS
DATA SHEET

EPA SAMPLE NO.

GW24IWMSD

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab Sample ID: E0622-06FMSD Date Received: 05/12/2006

Lab File ID: V2H4810.D Date Analyzed: 05/15/2006

Purge Volume: 25.0 (ML) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (UG/L)	Q
79-01-6	Trichloroethene	4.4	
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	4.6	
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	4.7	
100-41-4	Ethylbenzene	0.50	U
1330-20-7	Xylenes (Total)	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

LM 062806

Mitkem Corporation

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW09 1R86-GW09-063
Lab ID: E0622-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 11:20

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	05/17/2006 12:43	23735
Ethane	ND		26	µg/L	1	05/17/2006 12:43	23735
Ethene	ND		35	µg/L	1	05/17/2006 12:43	23735

JC
61506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation **Date:** *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW25IW
Lab ID: E0622-02

1R86-GW25IW 06B

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 11:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	450		14	µg/L	1	05/17/2006 12:50	23735
Ethane	ND		26	µg/L	1	05/17/2006 12:50	23735
Ethene	ND		35	µg/L	1	05/17/2006 12:50	23735

JC 61506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

IR 86-GW241W-04B

Client: CH2M Hill, Inc.
Client Sample ID: GW241W
Lab ID: E0622-06

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 13:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	~~1300~~	~~E~~ R, DL	14	µg/L	1	05/17/2006 14:29	2373
Ethane	ND		26	µg/L	1	05/17/2006 14:29	2373
Ethene	ND		35	µg/L	1	05/17/2006 14:29	2373

LM 0112006

JC 061506

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quanititation limits
- B - Analyte detected in the associated Method Blank
- DF - Dilution Factor
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW24IW
Lab ID: E0622-06 DL

1R86- GW24IW-06B

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 13:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	1400		27	µg/L	2	05/17/2006 16:16	2373!
Ethane	~~ND~~	R, DL	53	µg/L	2	05/17/2006 16:16	2373!
Ethene	~~ND~~	↓	70	µg/L	2	05/17/2006 16:16	2373!

LM 071206

JRC 61506

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quanititation limits
- B - Analyte detected in the associated Method Blank
- DF - Dilution Factor
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

1R86-GW33DW-010B DUP

Client: CH2M Hill, Inc.
Client Sample ID: GW33DWDUP
Lab ID: E0622-07

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 20:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	67		14	µg/L	1	05/17/2006 14:57	23735
Ethane	ND		26	µg/L	1	05/17/2006 14:57	23735
Ethene	ND		35	µg/L	1	05/17/2006 14:57	23735

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

''tkem Corporation

Date: *23-May-06*

IRB6-GW27IW-0605

Client: CH2M Hill, Inc.
Client Sample ID: GW27IW
Lab ID: E0622-08

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 15:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	660		14	µg/L	1	05/17/2006 15:04	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:04	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:04	23735

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

IR86-GW30IW-DUC

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW30IW
Lab ID: E0622-09

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 17:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	~~4200~~	~~E~~ R,DL	14	µg/L	1	05/17/2006 15:12	2373
Ethane	ND		26	µg/L	1	05/17/2006 15:12	2373
Ethene	ND		35	µg/L	1	05/17/2006 15:12	2373

UM 011206

JC 011506

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

1R86-GW30IW-060BDL

Client: CH2M Hill, Inc.
Client Sample ID: GW30IW DL
Lab ID: E0622-09

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 17:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	1300		27	µg/L	2	05/17/2006 16:24	23735
Ethane	~~ND~~	R, DL	53	µg/L	2	05/17/2006 16:24	23735
Ethene	~~ND~~	↓	70	µg/L	2	05/17/2006 16:24	23735

LM 071206

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *23-May-06*

IR86-GW30IW-06BDUP

Client: CH2M Hill, Inc.
Client Sample ID: GW30IWDUP
Lab ID: E0622-10

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 17:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	840		14	µg/L	1	05/17/2006 15:20	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:20	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:20	23735

JLC 6/5/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

1R86-GW211W-06B

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW211W
Lab ID: E0622-11

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 19:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	~~1400~~	~~E~~ R,DL	14	µg/L	1	05/17/2006 15:27	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:27	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:27	23735

VM 07/12/06

JJC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW21IW
Lab ID: E0622-11

1R86-GW21IW-060
AL

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 19:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	1500		27	µg/L	2	05/17/2006 16:39	23735
Ethane	~~ND~~	R, DL	53	µg/L	2	05/17/2006 16:39	23735
Ethene	~~ND~~	R, DL	70	µg/L	2	05/17/2006 16:39	23735

WM 07/2006 JPC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

IR86-GW10IW-00B

Client: CH2M Hill, Inc.
Client Sample ID: GW10IW
Lab ID: E0622-12

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 10:05

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID				**RSK175**			
Methane	940		14	µg/L	1	05/17/2006 15:34	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:34	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:34	23735

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

IR86-GW26IW-060B

Client: CH2M Hill, Inc.
Client Sample ID: GW26IW
Lab ID: E0622-13

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 17:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	~~9000~~	~~E~~ R,DL	14	µg/L	1	05/17/2006 15:47	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:47	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:47	23735

LM 5/12/06

JC 6/5/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation

Date: *23-May-06*

1R86-GW26IW-06B

Client: CH2M Hill, Inc.
Client Sample ID: GW26IW
Lab ID: E0622-13

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 17:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			RSK175				
Methane	2200		41	µg/L	3	05/17/2006 16:49	23735
Ethane	~~ND~~	R, DL	79	µg/L	3	05/17/2006 16:49	23735
Ethene	~~ND~~		100	µg/L	3	05/17/2006 16:49	23735

LM 051206

JAC 61506

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *23-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: TB051106
Lab ID: E0622-16

1R86-TB051106

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 13:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
DISSOLVED GASES BY GC-FID			**RSK175**				
Methane	ND		14	µg/L	1	05/17/2006 15:54	23735
Ethane	ND		26	µg/L	1	05/17/2006 15:54	23735
Ethene	ND		35	µg/L	1	05/17/2006 15:54	23735

JAC 6/15/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Corporation **Date:** *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW09 IR86-GW09-06B
Lab ID: E0622-01

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 11:20

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	3600		200	µg/L	1	05/16/2006 16:45	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	7.3	J MSH	2.0	mg/L	1	05/12/2006 14:21	23674
Nitrogen, Nitrate (As N)	0.29	J	0.13	mg/L	1	05/12/2006 14:21	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 14:21	23674
Sulfate	29		5.0	mg/L	1	05/12/2006 14:21	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	36		20	mg/L CaCO3	1	05/16/2006 11:00	23722
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	H UJ HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC 6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW34IW
Lab ID: E0622-03

1R86-GW34IW-063

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 14:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	1400		200	µg/L	1	05/16/2006 16:51	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	32	J MSH	2.0	mg/L	1	05/12/2006 14:45	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 14:45	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 14:45	23674
Sulfate	12		5.0	mg/L	1	05/12/2006 14:45	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	300		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC
6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW33DW IR86-GW33DW-06B
Lab ID: E0622-04

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 20:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	1800		200	µg/L	1	05/16/2006 16:54	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	18	J MSH	2.0	mg/L	1	05/12/2006 14:57	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 14:57	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 14:57	23674
Sulfate	19		5.0	mg/L	1	05/12/2006 14:57	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	17		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	170		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ WJ HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC 6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

MVTkem Corporation

Date: *31-May-06*

1R86-GW19DW-06B

Client: CH2M Hill, Inc.
Client Sample ID: GW19DW
Lab ID: E0622-05

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 14:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	400		200	µg/L	1	05/16/2006 16:57	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	74	J MSH	4.0	mg/L	2	05/12/2006 17:46	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 15:09	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 15:09	23674
Sulfate	15		5.0	mg/L	1	05/12/2006 15:09	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	210		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JRC 61406

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]tem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW33DWDUP
Lab ID: E0622-07

IR86-GW33DW-06BDUP

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 20:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	1000		200	µg/L	1	05/16/2006 17:27	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	27	J MSH	2.0	mg/L	1	05/12/2006 16:21	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 16:21	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 16:21	23674
Sulfate	22		5.0	mg/L	1	05/12/2006 16:21	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	14		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	130		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JEC 6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW27IW
Lab ID: E0622-08

1R86 - GW27IW-06B

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 15:30

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	2900		200	µg/L	1	05/16/2006 17:30	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	39	J NBH	2.0	mg/L	1	05/12/2006 16:33	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 16:33	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 16:33	23674
Sulfate	67		5.0	mg/L	1	05/12/2006 16:33	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	45		20	mg/L CaCO3	1	05/16/2006 11:00	23722
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	2.5	~~H~~ J HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JJC
10/4/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW30IWDUP
Lab ID: E0622-10

1286-GW30105-060 DUP

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/10/06 17:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	4000		200	µg/L	1	05/16/2006 17:36	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	24	J MSH	2.0	mg/L	1	05/12/2006 16:58	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 16:58	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 16:58	23674
Sulfate	11		5.0	mg/L	1	05/12/2006 16:58	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	260		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND	~~H~~ UJ HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC 6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW10IW
Lab ID: E0622-12

1R86-GW10IW-06B

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 10:05

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	12000		200	µg/L	1	05/16/2006 17:48	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	100	J MSH	10	mg/L	5	05/12/2006 17:58	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 17:22	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 17:22	23674
Sulfate	110		5.0	mg/L	1	05/12/2006 17:22	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	20		20	mg/L CaCO3	1	05/16/2006 11:00	23722
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	3.9	~~H~~ J HT	1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC
6/14/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

M[illegible]kem Corporation

Date: *31-May-06*

Client: CH2M Hill, Inc.
Client Sample ID: GW26IW
Lab ID: E0622-13

1R86-GW26IW-06B

Project: CTO-105 Camp Lejeune, Sites 35,73,86
Collection Date: 05/11/06 17:45

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
METALS BY ICP				**SW6010B_W**			
Iron	2500		200	µg/L	1	05/16/2006 17:51	23719
ION CHROMOTOGRAPHY				**E300IC_W**			
Chloride	39	J MSH	2.0	mg/L	1	05/12/2006 17:34	23674
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	05/12/2006 17:34	23674
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	05/12/2006 17:34	23674
Sulfate	18		5.0	mg/L	1	05/12/2006 17:34	23674
TOTAL ORGANIC CARBON BY COMBUSTION				**E415.1_TOC_W**			
Organic Carbon, Total	ND		10	mg/L	1	05/24/2006 11:43	23849
ALKALINITY (TOTAL)				**SM2320_W**			
Alkalinity, Total (As CaCO3)	260		20	mg/L CaCO3	1	05/16/2006 11:00	23724
FERROUS IRON BY PHENANTHROLINE METHOD				**SM3500D_FE2_W**			
Ferrous Iron	ND		1.0	mg/L	1	05/12/2006 11:57	23675
FERRIC IRON				**SM3500D_FE3_W**			
Ferric Iron	ND		10	mg/L	1	05/16/2006 00:00	23675
TOTAL SULFIDES				**SM4500_S-_W**			
Sulfide	ND		0.030	mg/L	1	05/15/2006 11:00	23706

JAC
6/4/06

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to CH2M Hill's CTO-105, Camp Lejeune, Site 86 project. Under this deliverable, analysis results are presented for twenty aqueous samples that received at Mitkem on April 6 and 7, 2006, and logged in under Mitkem work order Number E0412. Client sample IDs were shortened due to limitations of the CLP data reporting forms. A table listing shortened sample ID, full Sample ID and laboratory sample ID follows the narrative.

The analyses were performed according to EPA CLP and other methods and reported in a CLP-type format for Level 4 deliverable. with the exception of the RSK-175 and wet chemistry analyses. The analysis results for the RSK-175 and wet chemistry analyses are presented in the standard Mitkem format with full supporting raw data.

The following observation and/or deviations are observed for the following analyses:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting.
- M2 peak co-elution.
- M3 rising or falling baseline.
- M4 retention time shift.
- M5 miscellaneous – under this category, the justification is explained.

The enclosed report includes the originals of all data with the exception of logbook pages and certain initial calibrations. Photocopies of logbook pages are included, with the originals maintained on file at the laboratory. The originals of initial calibrations that are shared among several cases are maintained on file at the laboratory, with photocopies included in the data package.

2. Volatile Analysis (OLC03.2):

All samples were analyzed by the OLC03.2 procedure.

Trap used for instrument V2: O2 Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve. GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E0412
NAME DAVID DRY	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza BLVD STE 200		ADDRESS		TURNAROUND TIME: Per Contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME: CTO-105

CLIENT PROJECT #: 328432.FI.FQ.86

CLIENT P.O.#:

REQUESTED ANALYSES: Alkalinity, Ferrous Iron, Sulfide, TOC

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Alkalinity	Ferrous Iron	Sulfide	TOC	COMMENTS
IR86-GW31IWB 06	4/5/06 1015		X	X			-01	4	1	1	1	1	
IR86-GW31DWB 06	4/5/06 1055		X	X			-02	4	1	1	1	1	
1100 IR86-GW16IWB 06	4/5/06 1200		X	X			-03	4	1	1	1	1	
215 IR86-GW16DIWB 06	4/5/06 1215		X	X			-04	4	1	1	1	1	MS/MSD @ ~~Also~~
IR86 GW32IWB 06	4/5/06 1440		X	X			-05	4	1	1	1	1	
1215 IR86-GW16DIWB DUP 06	4/5/06 1215		X	X			* -06	4	1	1	1	1	
IR86-GW13B 06	4/5/06 1345		X	X			-07	4	1	1	1	1	
IR86-GW14IWB 06	4/5/06 1400		X	X			-08	4	1	1	1	1	
IR86-GW05-06B	4/5/06 1356		X	X			-09	4	1	1	1	1	
IR86-GW06IW-06B	4/4/06 1442		X	X			-10	4	1	1	1	1	

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
1	[signature]	4/5/06 1700	[signature]	4/6/06 0900		2°C
3		/		/		
7		/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY: CH2M HILL	PHONE: 7043290073	COMPANY	PHONE	LAB PROJECT #: E0412
NAME: DAVID DRY	FAX: 7043290141	NAME	FAX	
ADDRESS: 4824 Parkway Plaza BLVD STE 200		ADDRESS		TURNAROUND TIME: Percontract
CITY/ST/ZIP: Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME: CTO-105
CLIENT PROJECT #: 328432.FI.FQ86
CLIENT P.O.#:

REQUESTED ANALYSES: VOC, MSG, RSK175

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOC	MSG	RSK175	COMMENTS
IR86-GW06IW-068	4/5/06 1442		X	X			-10	4	2	2		
	/											
	/											
	/											
	/											
	/											
	/											
	/											
	/											
	/											
	/											
	/											

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
1	[signature]	4/5/06 1700	[signature]	4/6/06 0a100
		/		/
338		/		/

ADDITIONAL REMARKS:

COOLER TEMP: 3°C

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

8827

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E0412
NAME DAVID DRY	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza Blvd Ste 200		ADDRESS		TURNAROUND TIME: Per Contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME: CTO-105

CLIENT PROJECT #: 328432.FI.F0.86

CLIENT P.O.#:

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOC w/HCL	MEE RSK 125 w/HCL	COMMENTS
IR86-TB040606	4/6/06 0700		X	X			-14	4	2	2	
IR86-GW28IW-06B	4/6/06 0930		X	X			-15	4	2	2	
IR86-GW22IW-06B	4/6/06 1130		X	X			-16	4	2	2	
IR86-GW12IW-06B	4/6/06 0850		X	X			-17	4	2	2	
IR86-GW11-06B	4/6/06 0930		X	X			-18	4	2	2	
IR86-GW16IW-06B	4/6/06 0910		X	X			-19	4	2	2	
IR86-GW16DW-06B	4/6/06 1140		X	X			-20	4	2	2	
IR86-GW20IW-06B	4/6/06 1145		X	X				4	2	2	
IR86-GW08IW-06B	4/6/06 1330		X	X				4	2	2	
IR86-GW07-06B	4/6/06 1500		X	X				4	2	2	
IR86-GW01-06B	4/6/06 1330		X	X				4	2	2	
IR86-GW02IW-06B	4/6/06 1410		X	X				4	2	2	

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
1	[signature]	4/6/06 1700	[signature]	4/7/06 09:00
2		/		/
3		/		/

ADDITIONAL REMARKS:

COOLER TEMP: 5°C 4°C

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
Sample Condition Form

Page 1 of 2

Received By: NB	Reviewed By: [illegible]	Date: 4-6-06	MITKEM Project #: E0412
Client Project: CTO 105		Client: CH2MHILL	

Cooler Sealed (Yes) / No

1) Custody Seal(s) (Present) / Absent
(Coolers) / Bottles
(Intact) / Broken

2) Custody Seal Number(s)

3) Chain-of-Custody (Present) / Absent

4) Cooler Temperature 2C
Coolant Condition ICE

5) Airbill(s) (Present) / Absent
Airbill Number(s) FED-EX 829089526760

6) Sample Bottles (Intact)/Broken/Leakin

7) Date Received 4-6-06

8) Time Received 0900

Preservative Name/Lot No:

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"
E0412	-01	<2			7122INC	H	
	-02	<2			7122INC		
	-03	<2			7122INC		
	-04	<2			7122INC		
	-05	<2			7122INC		
	-06	<2			7122INC		
	-07	<2			7122INC		
	-08	<2			7122INC		
	-09	<2			7122INC		
	-10	<2			7122INC		
	-11						
	-12						
E0412	-13					H	

VOA Matrix Key:
US = Unpreserved Soil **A** = Air
UA = Unpreserved Aqueo **H** = HCl
M/N= MeOH & $NaHSO_4$ **E** = Encore
N = $NaHSO_4$ **M** =MeOH

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

Form ID: SampleCond.Form-11/04

MITKEM CORPORATION
Sample Condition Form

Received By: [illegible] Reviewed By: [illegible] Date: 4-7-06 MITKEM Workorder #: E0412

Client Project: CTO-105 Client: CH2MHILL

1) Cooler Sealed Yes / No

2) Custody Seal(s) Present / Absent
Coolers / Bottles
Intact / Broken

3) Custody Seal Number(s)

4) Chain-of-Custody Present / Absent

5) Cooler Temperature 5°C / 4°C
Coolant Condition ICE

6) Airbill(s) Present / Absent
Airbill Number(s) FED-EX

7) Sample Bottles Intact/Broken/Leaking

8) Date Received 4-7-06

9) Time Received 0900

Preservative Name/Lot No:

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"
E0412	-14					H	
	-15	<2			7122INC	H	
	-16	<2			7122INC	H	
	-17	<2			7122INC	H	
	-18	<2			7122INC	H	
	-19	<2			7122INC	H	
E0412	-20	<2			7122INC	H	

VOA Matrix Key:

US = Unpreserved Soil	A = Air
UA = Unpreserved Aqu.	H = HCl
M= MeOH	E = Encore
N = $NaHSO_4$	F = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes / no

SampleCond.Form-non-CLP.xls04/06/2006

Mitkem Sample ID	*Report*
E0412-07E	GW13
E0412-07F	GW13
E0412-08A	GW14IW
E0412-08B	GW14IW
E0412-08C	GW14IW
E0412-08D	GW14IW
E0412-08E	GW14IW
E0412-08F	GW14IW
E0412-09A	GW05
E0412-09B	GW05
E0412-09C	GW05
E0412-09D	GW05
E0412-09E	GW05
E0412-09F	GW05
E0412-10A	GW06IW
E0412-10B	GW06IW
E0412-10C	GW06IW
E0412-10D	GW06IW
E0412-10E	GW06IW
E0412-10F	GW06IW
E0412-11A	TB040506
E0412-11B	TB040506
E0412-12A	FB040506
E0412-13A	EB040506
E0412-14A	TB040606
E0412-14B	TB040606
E0412-15A	GW28IW
E0412-15B	GW28IW
E0412-15C	GW28IW
E0412-15D	GW28IW
E0412-15E	GW28IW
E0412-15F	GW28IW
E0412-16A	GW22IW
E0412-16B	GW22IW
E0412-16C	GW22IW
E0412-16D	GW22IW
E0412-16E	GW22IW
E0412-16F	GW22IW
E0412-17A	GW12IW
E0412-17B	GW12IW
E0412-17C	GW12IW
E0412-17D	GW12IW
E0412-17E	GW12IW
E0412-17F	GW12IW

If client sample ID has not been tr
in the column labeled "Reported C

cis-1,3-Dichloropropene-d4 was detected in method blanks and sampl organic deuterated monitoring compound spike solution contains both 1,3-dichloropropene isomers. cis-1,3-Dichloropropene-d4 is not a due compound for OLC03.2, while the trans isomer is. Please see the me regarding the volatile DMC spike solution from Cambridge Isotope L following the SDG Narrative. This compound is considered a laborat not reported as a tentatively identified compound.

Please note two small TICs may also be detected in the method blank These two TICs are impurities from the dueterated monitoring compo obtained from Cambridge Isotope Laboratories, Inc. These are also c artifacts and are not reported as tentatively identified compounds.

The aqueous samples were HCl preserved to pH <2.

Surrogate recovery: recoveries were within QC acceptance criteria o more than three surrogates outside of QC limits.

Matrix spike/matrix spike duplicate: duplicate matrix spikes were p GW16DW. Percent recoveries and replicate RPDs were within the

Sample analysis: sample GW15IW was reanalyzed at a 50X dilution determined as tentatively identified compounds. The alkane narrati narrative. No other unusual observation was made for the analysis.

3. Dissolved Gasses Analysis (RSK-175):

Samples were analyzed by the RSK-175 method for dissolved hydr instrument designated V7.

Lab control sample: spike recoveries were within the QC limits.

Sample analysis: sample GW11 was reanalyzed at a 2X dilution. N observations were made during sample analysis.

4. Wet Chemistry Analyses:

Samples were analyzed for the anions chloride, nitrate, nitrite and 300.0, total organic carbon by EPA Method 415.1, alkalinity by St 2320, total sulfides by method SM 4500-S-, and ferrous and ferric 3500-D. Ferric iron is determined by the difference between total i Total iron was analyzed by EPA Method 6010B. Results for total wet chemistry data sheets, with raw data included in the wet chem package. The data sheets list total iron as "iron", while ferric and f

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0412-18A	GW11	IR86-GW11-06B
E0412-18B	GW11	IR86-GW11-06B
E0412-18C	GW11	IR86-GW11-06B
E0412-18D	GW11	IR86-GW11-06B
E0412-18E	GW11	IR86-GW11-06B
E0412-18F	GW11	IR86-GW11-06B
E0412-19A	GW15IW	IR86-GW15IW-06B
E0412-19B	GW15IW	IR86-GW15IW-06B
E0412-19C	GW15IW	IR86-GW15IW-06B
E0412-19D	GW15IW	IR86-GW15IW-06B
E0412-19E	GW15IW	IR86-GW15IW-06B
E0412-19F	GW15IW	IR86-GW15IW-06B
E0412-20A	GW15DW	IR86-GW15DW-06B
E0412-20B	GW15DW	IR86-GW15DW-06B
E0412-20C	GW15DW	IR86-GW15DW-06B
E0412-20D	GW15DW	IR86-GW15DW-06B
E0412-20E	GW15DW	IR86-GW15DW-06B
E0412-20F	GW15DW	IR86-GW15DW-06B

f client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (CLP Method OLC03.2)

Holding Times

Sampling Date: 04/05-06/06
Received Date: 04/06-07/06
Analysis Dates: 04/06-10/06

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of BFB.
No qualifications were required for the initial calibrations; however, qualifications were required for the continuing calibrations due to high %D values; see attached Form VIIs.

Internal Standards

All criteria were met.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying these qualifications.
- Apply the same data validation guidelines to any associated field QC blanks and all associated samples.
- Qualification are applied as stated in the table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method	< CRQL *	Not detected	No action
Method	< CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	> CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL but < blank result	Report the blank concentration for the sample with a "U" or qualify the data as unusable "R"
		> CRQL and ≥ blank result	Professional judgment
Method	= CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	Gross contamination	Positive	Qualify results as unusable "R"
Method	TIC >2 ug/L	Positive	Professional judgment
Storage	≥ CRQL *	Positive	Qualify results with a "J"
Storage	Grossly above CRQL *	Positive	Qualify results as unusable "R"

* 10X CRQL for methylene chloride and cyclohexane and 2X CRQL for 2-butane and acetone.

Note: Compounds for which there was no action required are not included in the following tables.

The associated holding blank was VHBLK2P (no positive results exhibited). There was no qualifications required based on method blank contamination. The associated field QC for this data package was: trip blank IR86-TB040506, IR86-TB040606, equipment blank IR86-EB040506, IR86-EB040606 and field blank IR86-FB040506. The method blanks associated with field QC blanks exhibited some contamination but the QC blanks were not qualified, per the request of the client.

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit
IR86-TB040506	methylene chloride	0.84 ug/L	0.50 ug/L
	chloroform	0.35J	0.50
IR86-TB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-EB040506	methylene chloride	0.52 ug/L	0.50 ug/L
IR86-EB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-FB040505	methylene chloride	0.50 ug/L	0.50 ug/L
	chloroform	0.84	0.50

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW16DW-06B, IR86-GW28IW-06B, IR86-GW15DW-06B	methylene chloride	CRQL	BL
IR86-GW15IW-06B	methylene chloride	U	BL

Surrogates

All criteria were met with the following exceptions listed in the table below. Qualify all compounds associated with these DMCs as listed in the table.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW16IW-06B	trans-1,3-dichloropropene-d4	66%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		
IR86-GW05-06B	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	bromoform-d	44%	76-135%		
IR86-GW06IW-06B	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	2-hexanone-d5	32%	37-169%		
	bromoform-d	62%	76-135%		
IR86-GW12IW-06B	trans-1,3-dichloropropene-d4	60%	80-128%	J/UJ	SSL
	bromoform-d	60%	76-135%		
IR86-TB040606	trans-1,3-dichloropropene-d4	76%	80-128%	J/UJ	SSL
	bromoform-d	72%	76-135%		
IR86-GW11-06B	trans-1,3-dichloropropene-d4	58%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW15IW-06B	trans-1,3-dichloropropene-d4	72%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		
IR86-GW15DW-06B	trans-1,3-dichloropropene-d4	68%	80-128%	J/UJ	SSL
	bromoform-d	64%	76-135%		

Sample Condition Notification

Mitkem Project#: E0 412
Client: CH2M HILL
Client project #/name:

Date of Receipt: 4/06/06
Received By: [illegible]

Unusual Occurance Description:

Broken TOC VOA VIAL for Sample
IR 86 - GW 16 & W 06 B 4/5/06 12:15

Client Contacted:
Contacted via: Phone/Fax/E-mail
Date: Time:
Contacted By:
Name of person contacted:

Client Response:
Responded via: Phone/Fax/E-mail
Date:
Name of person responding:
Responding to:

N/A

Mitkem Action Taken: will use a vial from RSK-175 for TOC.

*Mitkem and Client Sample ID Summary Report**

Mitkem Workorder: E0412

Client Name: CH2M Hill, Inc.

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0412-01A	GW31IW	IR86-GW31IW-06B
E0412-01B	GW31IW	IR86-GW31IW-06B
E0412-01C	GW31IW	IR86-GW31IW-06B
E0412-01D	GW31IW	IR86-GW31IW-06B
E0412-01E	GW31IW	IR86-GW31IW-06B
E0412-01F	GW31IW	IR86-GW31IW-06B
E0412-02A	GW31DW	IR86-GW31DW-06B
E0412-02B	GW31DW	IR86-GW31DW-06B
E0412-02C	GW31DW	IR86-GW31DW-06B
E0412-02D	GW31DW	IR86-GW31DW-06B
E0412-02E	GW31DW	IR86-GW31DW-06B
E0412-02F	GW31DW	IR86-GW31DW-06B
E0412-03A	GW16IW	IR86-GW16IW-06B
E0412-03B	GW16IW	IR86-GW16IW-06B
E0412-03C	GW16IW	IR86-GW16IW-06B
E0412-03D	GW16IW	IR86-GW16IW-06B
E0412-03E	GW16IW	IR86-GW16IW-06B
E0412-03F	GW16IW	IR86-GW16IW-06B
E0412-04A	GW16DW	IR86-GW16DW-06B
E0412-04B	GW16DW	IR86-GW16DW-06B
E0412-04C	GW16DW	IR86-GW16DW-06B
E0412-04D	GW16DW	IR86-GW16DW-06B
E0412-04E	GW16DW	IR86-GW16DW-06B
E0412-04F	GW16DW	IR86-GW16DW-06B
E0412-05A	GW32IW	IR86-GW32IW-06B
E0412-05B	GW32IW	IR86-GW32IW-06B
E0412-05C	GW32IW	IR86-GW32IW-06B
E0412-05D	GW32IW	IR86-GW32IW-06B
E0412-05E	GW32IW	IR86-GW32IW-06B
E0412-05F	GW32IW	IR86-GW32IW-06B
E0412-06A	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-06B	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-06C	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-06D	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-06E	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-06F	GW16DWDUP	IR86-GW16DW-06BDUP
E0412-07A	GW13	IR86-GW13-06B
E0412-07B	GW13	IR86-GW13-06B
E0412-07C	GW13	IR86-GW13-06B
E0412-07D	GW13	IR86-GW13-06B

If client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"

Laboratory Control Sample

No LCS was submitted with this data package.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample IR86-GW16DW-06B; all criteria were met.

Field Duplicate Sample Summary

A field duplicate was submitted for sample IR86-GW16DW-06B; there were no positive results above the CRQL-no qualifications required.

Specific Comments:

All sample results were reported within the calibration range of the instruments. A dilution was required for sample IR86-GW151W-06B; therefore, do not use the E-flagged compound results in the initial analysis in favor of the corresponding D-flagged compound result in the dilution.

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer Laura Mascarotti **Date:** 6/28/06

5LCA

LOW CONCENTRATION WATER VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Lab File ID: V2H3740.D BFB Injection Date: 04/06/2006

Instrument ID: V2 BFB Injection Time: 10:51

GC Column: DB-624 ID: 0.25 (MM) Column Length: 30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	19.3
75	30.0 - 66.0% of mass 95	48.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 -120.0% of mass 95	84.2
175	4.0 - 9.0 % of mass 174	6.0 (7.2)1
176	93.0 - 101.0% of mass 174	82.6 (98.0)1
177	5.0 - 9.0% of mass 176	5.5 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0052K	VSTD0052K	V2H3741.D	04/06/2006	11:04
02	VBLK2K	MB-23029	V2H3742.D	04/06/2006	11:44
03	GW31IW	E0412-01F	V2H3751.D	04/06/2006	16:31
04	GW31DW	E0412-02F	V2H3752.D	04/06/2006	17:02
05	GW16IW	E0412-03F	V2H3753.D	04/06/2006	17:32
06	GW16DW	E0412-04F	V2H3754.D	04/06/2006	18:03
07	GW16DWMS	E0412-04FMS	V2H3755.D	04/06/2006	18:34
08	GW16DWMSD	E0412-04FMSD	V2H3756.D	04/06/2006	19:04
09	TB040506	E0412-11A	V2H3757.D	04/06/2006	19:35
10	GW32IW	E0412-05F	V2H3758.D	04/06/2006	20:06
11	GW16DWDUP	E0412-06F	V2H3759.D	04/06/2006	20:36
12	GW13	E0412-07F	V2H3760.D	04/06/2006	21:07
13	FB040506	E0412-12A	V2H3761.D	04/06/2006	21:37
14	GW14IW	E0412-08F	V2H3762.D	04/06/2006	22:08
15	GW05	E0412-09F	V2H3763.D	04/06/2006	22:39

7LCA

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION - Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Instrument ID: V2 Calibration Date: 04/06/2006 Time: 11:04

Lab File ID: V2H3741.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052K Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.383	0.363		-5.3	
Chloromethane	0.486	0.535		10.0	
Vinyl chloride	0.486	0.504	0.100	3.7	30.0
Bromomethane	0.384	0.361	0.100	-5.9	30.0
Chloroethane	0.259	0.274		5.8	
Trichlorofluoromethane	0.579	0.667		15.1	
1,1-Dichloroethene	0.361	0.375	0.100	4.0	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.400	0.417		4.3	
Acetone	0.049	0.051		4.7	
Carbon disulfide	1.129	1.584		40.3	
Methyl acetate	0.127	0.105		-17.1	
Methylene chloride	0.435	0.376		-13.6	
trans-1,2-Dichloroethene	0.387	0.395		2.0	
Methyl tert-butyl ether	0.684	0.633		-7.4	
1,1-Dichloroethane	0.951	0.923	0.200	-2.9	30.0
cis-1,2-Dichloroethene	0.447	0.424		-5.1	
2-Butanone	0.091	0.087		-4.8	
Bromochloromethane	0.194	0.190	0.050	-2.3	30.0
Chloroform	0.986	1.007	0.200	2.1	30.0
1,1,1-Trichloroethane	0.850	0.789	0.100	-7.1	30.0
Cyclohexane	0.973	0.908		-6.7	
Carbon tetrachloride	0.783	0.733	0.100	-6.4	30.0
Benzene	2.194	2.096	0.400	-4.5	30.0
1,2-Dichloroethane	0.467	0.437	0.100	-6.5	30.0
Trichloroethene	0.554	0.532	0.300	-4.0	30.0
Methylcyclohexane	0.834	0.755		-9.5	

All other compounds must meet a minimum RRF of 0.010.

7LCB

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract: -

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Instrument ID: V2 Calibration Date: 04/06/2006 Time: 11:04

Lab File ID: V2H3741.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052K Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.547	0.532		-2.8	
Bromodichloromethane	0.598	0.525	0.200	-12.1	30.0
cis-1,3-Dichloropropene	0.730	0.599	0.200	-17.9	30.0
4-Methyl-2-pentanone	0.223	0.195		-12.7	
Toluene	1.990	1.917	0.400	-3.6	30.0
trans-1,3-Dichloropropene	0.524	0.420	0.100	-19.8	30.0
1,1,2-Trichloroethane	0.250	0.244	0.100	-2.4	30.0
Tetrachloroethene	0.419	0.419	0.100	0.1	30.0
2-Hexanone	0.160	0.149		-7.0	
Dibromochloromethane	0.365	0.297	0.100	-18.7	30.0
1,2-Dibromoethane	0.259	0.241	0.100	-6.9	30.0
Chlorobenzene	1.286	1.265	0.500	-1.7	30.0
Ethylbenzene	3.295	3.263	0.100	-1.0	30.0
Xylenes (Total)	0.725	0.747	0.300	3.0	30.0
Styrene	1.137	1.142	0.300	0.4	30.0
Bromoform	0.391	0.254	0.050	-35.0	30.0
Isopropylbenzene	1.774	1.757		-0.9	
1,1,2,2-Tetrachloroethane	0.277	0.267	0.100	-3.6	30.0
1,3-Dichlorobenzene	2.012	1.847	0.400	-8.2	30.0
1,4-Dichlorobenzene	2.025	1.843	0.400	-9.0	30.0
1,2-Dichlorobenzene	1.690	1.601	0.400	-5.2	30.0
1,2-Dibromo-3-chloropropane	0.077	0.062		-19.2	
1,2,4-Trichlorobenzene	1.025	0.927	0.200	-9.5	30.0
1,2,3-Trichlorobenzene	0.846	0.792	0.200	-6.4	30.0

J/UJ

All other compounds must meet a minimum RRF of 0.010.

7LCC

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0412

Instrument ID: V2 Calibration Date: 04/06/2006 Time: 11:04

Lab File ID: V2H3741.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052K Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Vinyl chloride-d3	0.333	0.470		41.3	
Chloroethane-d5	0.266	0.329		23.7	
1,1-Dichloroethene-d2	0.229	0.269		17.7	
2-Butanone-d5	0.072	0.084		16.6	
Chloroform-d	0.815	0.778		-4.5	
1,2-Dichloroethane-d4	0.358	0.321		-10.4	
Benzene-d6	1.931	1.881		-2.6	
1,2-Dichloropropane-d6	0.643	0.628		-2.4	
Toluene-d8	1.594	1.512		-5.1	
trans-1,3-Dichloropropene-d4	0.770	0.718		-6.8	
2-Hexanone-d5	0.070	0.075		7.8	
Bromoform-d	0.969	0.772		-20.3	
1,1,2,2-Tetrachloroethane-d2	0.272	0.248		-8.9	
1,2-Dichlorobenzene-d4	1.012	0.931		-8.0	

Initial Calibration Date: 3/28/2006

RRF and %RSD Calculations:

Compound Name: vinyl chloride
Lab Value: 0.4550

Area of Compound	668428
Area of Internal STD	293888
Conc. of Internal STD	5
Conc. of Compound	25
Calculated RRF	0.455

Compound Name: 4-methyl-2-pentanone
Lab Value: 4.700

RRF of STD 1	0.225
RRF of STD 2	0.234
RRF of STD 3	0.206
RRF of STD 4	0.227
RRF of STD 5	0.225
Calculated % RSD	4.658

Continuing Calibration File ID: 4/10/2006

RRF and %D Calculations:

Compound Name: chloromethane
Lab Value: 0.5570

Area of Compound	353816
Area of Internal STD	635566
Conc. of Internal STD	5
Conc. of Compound	5
Calculated RRF	0.557

Compound Name: benzene
Lab Value: 2.400

Average RRF	2.194
Calibration Check RRF	2.246
Calculated % D	-2.370

SAMPLE CALCULATION

Sample ID: IR86-GW31IW-06B
Standard ID: 4/6/2006
Compound: cis-1,2-dichloroethene
Concnetration: 1.1 ug/L

	Water (ug/L)	Soil (ug/Kg)	Soil ug/Kg)
Area of Compound	59031		
Area of Internal STD	633844		
Conc. of Internal (ng)	125		
RRF of Compound	0.424		
Dilution Factor	1	1	
Weight of Sample	NA		
Volume of Sample	25	NA	
% Moisture	NA		
Aliquot of methol	NA	NA	
Concentration	1.1	#DIV/0!	#DIV/0!

	RT of Internal STD	RT of Compound	RRT
Sample	6.472	5.125	0.792
Standard	6.464	5.116	0.791

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (Methane, Ethane and Ethene- RSK-175)

Holding Times

Sampling Date: 4/5/06, 4/6/06
Received Date: 4/6-7/06
Preparation Date: 4/8/06
Analysis Dates: 4/8/06

All holding time requirements were met.

Calibrations

A five-point calibration curve was analyzed for the target compounds methane, ethane and ethene. RFs and %RSDs were calculated using the external standard method. All %RSDs were within QC limits. Continuing calibration standards were analyzed per the method. All %Ds were within QC limits in the CCVs analyzed.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Any compound detected in the sample, and the associated blank, must be qualified by elevating the result to the limit of detection or by adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.
- Sample weight, volume or dilution factor must be taken into consideration when applying the 5X criteria.
- Apply the same data validation guidelines to any associated rinse and field blanks and all associated samples.
- Qualification/Action codes:

U -	The sample result is greater than the RL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".
RL -	The sample result is less than the RL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the RL.
No Action -	The sample result is greater than the RL and greater than five times (5X) the blank value.
B -	The sample result is less than five times (5X) the blank value. (Region III)

Note: Compounds for which there was no action required are not included in the following tables.

The associated field QC blanks for this data package were trip blanks IR86-TB040506 and IR86-TB040606. These trip blanks did not exhibit contamination. The associated field and rinse blank were not analyzed for this method. The method blank associated with the samples did not exhibit contamination.

This SDG contains IC-300.0, Alkalinity, Ferric Fe, Ferrous Fe, Sulfide and TOC. Validation performed using analytical methods and laboratory SOPs. Fe by 6010B was present in the data package but validation of this method was not requested or performed.

HOLDING TIMES

Sampling Date: 4/5/06, 4/5/06
Received Date: 4/6/06, 4/7/06
Preparation & Analysis Dates: 4/6 & 4/7- IC, 4/10- Alk., 4/6 & 4/7- Ferrous Fe, 4/11- Ferric Fe, 4/11- Sulfide, 4/10- TOC

All holding time requirements were met with the following exception. Ferrous Fe by SM3500D does not have a holding time per the method – it says to do the analysis as soon as possible. The lab assigns a 24-hour time to this method. The samples were analyzed ASAP on the day of receipt. In most cases this was within the 24 hour hold time assigned by Mitkem. If the analysis was not performed within 24 hours of sampling – the lab flagged the reported result with an H flag. Samples reported with an H flag are qualified as estimated J/UJ due to exceeded laboratory holding time.

CALIBRATIONS

The proper calibration procedures were followed for the various wet chemistry methods (EPA-300 IC, SM2320_W Alkalinity, SM4500 Sulfide, 415.1 TOC, SM3500D_W Ferrous Fe). All associated ICV/CCV criteria were met. Raw data was verified. There is no calibration method/requirements for the SM 3500-Fe-D for Ferric Fe. It is simply the total Fe result (analyzed by SW-846 method 6010B but not validated) minus the Ferrous Fe result.

BLANK SUMMARY

Blank qualification guidelines:

- No action is taken if an analyte is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying the criteria.
- Apply the same data validation guidelines to any associated calibration, preparation, and field QC blanks and all associated samples.
- Qualification/Action codes:

No Action - The sample result is greater than the RL and greater than five times (5X) the blank value.

U - The sample result is less than five times (5X) the blank value. Report the result as non-detect at the reported concentration or at the analyte/compound RL.

Blank Contamination and Qualification Summaries

Blank ID	Analyte	Concentration	Action Level	Q Flag
no contamination noted				

The concentration noted for the CCBs is the highest concentration in all the CCBs. However, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination. Negative contamination in a prep blank or CCB, if less than the analyte CRDL, is qualified based on professional judgement.

*Please Note: Field QC blanks were not analyzed for the Wet Chem methods.

MATRIX SPIKE/DUPLICATE SUMMARY

The MS/MD pair of sample IR86-GW31IW-06B performed for the wet chemistry fractions in this SDG exhibited acceptable recoveries and RPD for all parameters with the exception of nitrogen as N (nitrate) in the MS and MSD and nitrogen as N (nitrite) in the MSD in the IC 300.0 analysis. The associated analytical data was not qualified because the non-compliances were very slight and the other spike sample exhibited acceptable recoveries for the noted parameter.

FIELD DUPLICATE SAMPLE SUMMARY

Note: Field duplicate results are assessed only if both results are above the CRDL.

Sample ID: **IR86-GW16IW-06B** **Duplicate Sample ID:** **IR86-GW16IW-06BDUP**

Analyte	Sample Conc.	Duplicate Conc.	RPD
chloride	64	66	3%
sulfate	30	97	106%
alkalinity	240	240	0%

Comments: Based on the significantly non-compliant RPD for sulfate (>100%) the reported results for sulfate in the field duplicate pair were qualified as estimated J.

SAMPLE RESULT VERIFICATION

Specific Comments:

Raw data was verified. Resubmissions were required for the IC and TOC fractions. For the IC fraction the ICAL summaries were missing and for the TOC fraction the ICAL raw data and summaries were missing from the data packages. ICAL summaries were received on 6/20/06. ICAL raw data was requested on 6/15/06 and again on 6/27/06. Response was received from the lab via e-mail on 6/27/06 regarding the TOC raw calibration data. According to the lab the instrument system does not provide raw data for the ICAL standards, only for injections labeled as samples (see enclosed e-mail from lab). Please note the lack of ICAL raw data for TOC fraction. Please see enclosed copies of all correspondence with the lab.

Reviewer Jacqueline A Cleveland **Date:** 6/27/06

CLIENT: CH2M Hill, Inc.
Work Order: E0412
Project: CTO-105 Camp Lejeune, Sites 35,73,86

ANALYTICAL QC SUMMARY REPORT

TestCode: E300IC_W

Sample ID E0412-01DMS | SampType: MS | TestCode: E300IC_W | Prep Date: 04/06/2006 | Run ID: IC1_060406A
Client ID: GW31IW | Batch ID: 23028 | Units: mg/L | Analysis Date: 04/06/2006 | SeqNo: 480889

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	61.98	20	16.00	47.41	91.1	90	110	0	0		
Nitrogen, Nitrate (As N)	0.8830	1.3	1.000	0.02310	86.0	90	110	0	0		JS
Nitrogen, Nitrite (As N)	1.092	1.3	1.000	0.1794	91.3	90	110	0	0		J
Sulfate	769.9	50	40.00	847.9	0	90	110	0	0		S

Sample ID E0412-01DMSD | SampType: MSD | TestCode: E300IC_W | Prep Date: 04/06/2006 | Run ID: IC1_060406A
Client ID: GW31IW | Batch ID: 23028 | Units: mg/L | Analysis Date: 04/06/2006 | SeqNo: 480890

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	67.32	20	16.00	47.41	124	90	110	61.98	8.26	20	S
Nitrogen, Nitrate (As N)	0.8331	1.3	1.000	0.02310	81.0	90	110	0.8830	0	20	JS
Nitrogen, Nitrite (As N)	1.066	1.3	1.000	0.1794	88.6	90	110	1.092	0	20	JS
Sulfate	761.3	50	40.00	847.9	0	90	110	769.9	1.12	20	S

NO_3 } J/UJ in all
~~NO_2~~
Do not flag NO_2 - OK in MS
JC

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Laboratory Control Sample

An LCS pair (LCS-23067) was submitted with this data package; all criteria were met.

Matrix Spike/Spike Duplicate Samples

There was no MS/MSD pair submitted for this SDG.

Field Duplicate Sample Summary

Two field duplicate pairs were submitted for this SDG.

Sample ID: **IR86-GW16DW-06B** **Duplicate Sample ID:** **IR86-GW16DW-06BDUP**

Compound	Sample Conc.	Duplicate Conc.	RPD
			#DIV/0!

Comments: No qualifications were required. No positive results were reported in the associated field duplicate pair.

Specific Comments:

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer: Angeline A Cleveland **Date:** 6/28/06

Initial Calibration Date: 10/16/002

RF and %RSD Calculations:

Compound Name: methane, Level 1
Lab Value: 3914.1260

Area of Compound	319538
Conc of Compd	100
Calculated RRF	3195

Compound Name: ethane
Lab Value: 3.250

RRF of STD 1	5696
RRF of STD 2	6153
RRF of STD 3	6193
RRF of STD 4	6002
RRF of STD 5	6012
Calculated % RSD	3.25

Continuing Calibration File ID: 4/8/06, 4:24pm

RF and %D Calculations:

Compound Name: methane
Lab Value RRF: 3977
Lab Value %D: 22.8

Area of compound	7953834
Concentration	2000
Calculated RRF	3977

Average RRF	3238
Calibration Check RRF	3977
Calculated % D	-22.8

Sample Calculation

Sample ID: IR86-GW05-06B
Standard ID: ICAL 10/16/06
Compound: methane
Concentration: 210 ug/L

Area of Compound	6111502
RRF of Compound	3238
Dilution Factor	1
Conc. PPM of gas (V/V)	1887.43

MD of gas (g/L)	0.658314
sample volume (ml)	37
headspace vol (ml)	5
Henry's Law constant	41300
Vol. Gas at constant T (L)	22.4
Temp. (K)	297
Temp. (°C)	24
constant	55.504
MW of gas (g/mol)	16.0426
Conc. Gas A (ug/L)	40.69304
Conc. Gas B (ug/L)	167.9084
Total Conc. Gas (ug/L)	**208.6014**

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to CH2M Hill's CTO-105, Camp Lejeune, Site 86 project. Under this deliverable, analysis results are presented for eighteen aqueous samples that received at Mitkem on April 7 and 8, 2006, and logged in under Mitkem work order Number E0424. A discrepancy between sample IDs listed on the chain of custody and sample bottle labels was resolved through communication with the client. Client sample IDs were shortened due to limitations of the CLP data reporting forms. A table listing shortened sample ID, full Sample ID and laboratory sample ID follows the narrative.

The analyses were performed according to EPA CLP and other methods and reported in a CLP-type format for Level 4 deliverable. with the exception of the RSK-175 and wet chemistry analyses. The analysis results for the RSK-175 and wet chemistry analyses are presented in the standard Mitkem format with full supporting raw data.

The following observation and/or deviations are observed for the following analyses:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting.
- M2 peak co-elution.
- M3 rising or falling baseline.
- M4 retention time shift.
- M5 miscellaneous – under this category, the justification is explained.

The enclosed report includes the originals of all data with the exception of logbook pages and certain initial calibrations. Photocopies of logbook pages are included, with the originals maintained on file at the laboratory. The originals of initial calibrations that are shared among several cases are maintained on file at the laboratory, with photocopies included in the data package.

2. Volatile Analysis (OLC03.2):

All samples were analyzed by the OLC03.2 procedure.

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E0412
NAME DAVID DRY	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza Blvd Ste 200		ADDRESS		TURNAROUND TIME: Per contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME: CTO-105
CLIENT PROJECT #: 328432.FI.FQ.06
CLIENT P.O.#:

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOC w/HCL	MEE RSK 125 w/HCL	COMMENTS
IR86-TB040606	4/6/06 0700		X	X			-11	4	2	2	
IR86-GW28IW-06B	4/6/06 0930		X	X			-15	4	2	2	
IR86-GW22IW-06B	4/6/06 1130		X	X			-16	4	2	2	
IR86-GW12IW-06B	4/6/06 0850		X	X			-17	4	2	2	
IR86-GW11-06B	4/6/06 0930		X	X			-18	4	2	2	
IR86-GW16IW-06B	4/6/06 0910		X	X			-19	4	2	2	
IR86-GW16DW-06B	4/6/06 1140		X	X			-20	4	2	2	
IR86-GW20IW-06B	4/6/06 1145		X	X			1	4	2	2	
IR86-GW08IW-06B	4/6/06 1330		X	X			2	4	2	2	
IR86-GW07-06B	4/6/06 1500		X	X			3	4	2	2	
IR86-GW01-06B	4/6/06 1330		X	X			4	4	2	2	
IR86-GW02IW-06B	4/6/06 1410		X	X			5	4	2	2	

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
	[signature]	4/6/06 1700	[signature]	4/7/06 09:00
		/		/
		/		/

ADDITIONAL REMARKS:

COOLER TEMP: 5c 4°c

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

00824

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE	COMPANY	PHONE	LAB PROJECT #: EQ1214
NAME DAVID DRY	FAX	NAME	FAX	
ADDRESS 4824 Parkway Plaza BLVD STE 200		ADDRESS		TURNAROUND TIME: Per Contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
CTO-105	328432.FI.FQ.86	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Alkalinity, Ferrous	Sulfide	TOC	Ferric Iron									COMMENTS
IR86-GW28IW-06B	4/6/06 0930		X	X				4	1	1	1	1									
IR86-GW22IW-06B	4/6/06 1130		X	X				4	1	1	1	1									
IR86-GW12IW-06B	4/6/06 0850		X	X				4	1	1	1	1									
IR86-GW11-06B	4/6/06 0930		X	X				4	1	1	1	1									
IR86-GW15IW-06B	4/6/06 0910		X	X				4	1	1	1	1									
IR86-GW15DW-06B	4/6/06 1140		X	X				4	1	1	1	1									
IR86-GW20IW-06B	4/6/06 1145		X	X			-01	4	1	1	1	1									
IR86-GW08IW-06B	4/6/06 1330		X	X			-02	4	1	1	1	1									
IR86-GW07-06B	4/6/06 1500		X	X			-03	4	1	1	1	1									
IR86-GW01-06B	4/6/06 1330		X	X			-04	4	1	1	1	1									
IR88-GW02IW-06B	4/6/06 1410		X	X			-05	4	1	1	1	1									

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
	[signature]	4/6/06 1700	[signature]	4/7/06 09:00		5°C 4°C
		/		/		
		/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E0424
NAME DAVID DRY	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza BLVD STE 200		ADDRESS		TURNAROUND TIME: Per contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
CTO-105	328432.FI.FQ.86	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	VOC w/HCL	MeOH RSK125 w/HCL										COMMENTS
IR86-GW29IW-06B	4/6/06 1405		X	X			-6	4	2	2										✓
IR86-GW23IW-06H	4/6/06 1600		X	X			-7	4	2	2										
IR86-GW23IW-06BDUP	4/6/06 1600		X	X			-8	4	2	2										✓
IR86-EB040606	4/6/06 1600		X	X			-9	2	2											

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
	[signature]	4/6/06 1700	[signature]	4/7/06 09:00		5°C 4°C
		/		/		
		/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E0424
NAME DAVID DRY	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza BLVD Ste 200		ADDRESS		TURNAROUND TIME:
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
CTO-105	328432.FI.FQ.80	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Alk, Anions, Ferrous	Sulfide	TOC	Ferric Iron									COMMENTS
IR86-GW23IW-06B	4/6/06 1405		X	X			-6	4	1	1	1	1									✓
IR86-GW23IW-06B	4/6/06		X	X			-7	4	1	1	1	1									← ~~Not in cooler~~
IR86-GW23IW-06BDUP	4/6/06		X	X			-8	4	1	1	1	1									✓ BJ 4/7/06
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
	[signature]	4/6/06 1700	[signature]	4/7/06 09:00		5c 4c
		/		/		
		/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 7043290073	COMPANY	PHONE	LAB PROJECT #: E9424
NAME DAVID DRY / CLT	FAX 7043290141	NAME	FAX	
ADDRESS 4824 Parkway Plaza BLVD Ste 200		ADDRESS		TURNAROUND TIME: Per contract
CITY/ST/ZIP Charlotte, NC 28217		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
CTO - 105	328432.FI.FQ.86	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Alk, Anions, Ferrous	Sulfide	TOC	Ferric Iron	COMMENTS
IR86-GW04IW-06B	4/7/06 1015		X	X			10	4	1	1	1	1	
IR86-GW04IW-06BDUP	4/7/06 1015		X	X			11	4	1	1	1	1	
IR86-GW18DW-06B	4/7/06 1015		X	X			14	4	1	1	1	1	
IR86-GW17IW-06B	4/7/06 0920		X	X			15	4	1	1	1	1	
IR86-GW17DW-06B	4/7/06 1125		X	X			16	4	1	1	1	1	
IR86-GW03-06B	4/7/06 1230		X	X			17	4	1	1	1	1	
IR86-BS428-GW05-06B	4/7/06 1210		X	X			18	4	1	1	1	1	
	/												
	/												
	/												
	/												
	/												

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
	[signature]	4/7/06 1700	[signature]	4/8/06 09:30		3°C
		/		/		
		/		/		

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
Sample Condition Form

Page 1 of 1

Received By: [illegible] | Reviewed By: [illegible] | Date: 4-7-06 | MITKEM Workorder #: E0424

Client Project: CTO 105 | Client: CH2MHILL

1) Cooler Sealed Yes / No

2) Custody Seal(s) Present / Absent
Coolers / Bottles
Intact / Broken

3) Custody Seal Number(s)

4) Chain-of-Custody Present / Absent

5) Cooler Temperature 5°C / 4°C
Coolant Condition ICE

6) Airbill(s) Present / Absent
Airbill Number(s) FED-EX

7) Sample Bottles Intact/Broken/Leaking

8) Date Received 4-7-06

9) Time Received 0900

Preservative Name/Lot No:

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"
E0424	-01	<2			>12 ZINC	H	
	-02					H	
	-03					H	
	-04					H	
	-05					H	
	-06					H	
	-07					H	
	-08	<2			7 12 ZINC	H	
E0424	-09					H	

VOA Matrix Key:

US = Unpreserved Soil	A = Air
UA = Unpreserved Aqu.	H = HCl
M= MeOH	E = Encore
N = $NaHSO_4$	F = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes / no

SampleCond.Form-non-CLP.xls04/06/2006

MITKEM CORPORATION

Sample Condition Form

Page ___ of ___

Received By: [illegible] | Reviewed By: [illegible] | Date: 4/8/06 | MITKEM Workorder #: E0424

Client Project: CTO-105 Site 86 | Client: CH2M-Hill

1) Cooler Sealed (Yes / No): Yes

2) Custody Seal(s): Present / Absent; Coolers / Bottles; Intact / Broken

3) Custody Seal Number(s): Sign / Date

4) Chain-of-Custody: Present / Absent

5) Cooler Temperature: 3°C

Coolant Condition: Ice / OK

6) Airbill(s): Present / Absent

Airbill Number(s): 8549-4157-1356

7) Sample Bottles: Intact / Broken / Leaking

8) Date Received: 4/8/06

9) Time Received: 09:30

Preservative Name/Lot No:

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"
E0424	10	<2			>12	W	
	11	<2			>12		
	12	—			—		
	13	—			~~>12~~ 4/8/06		
	14	<2			>12		
	15	<2			>12		
	16	<2			>12		
	17	<2			>12		
E0424	18	<2			>12	W	

VOA Matrix Key:

US = Unpreserved Soil	A = Air
UA = Unpreserved Aqu.	H = HCl
M= MeOH	E = Encore
N = $NaHSO_4$	F = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

SampleCond.Form-non-CLP.xls04/06/2006

*Mitkem and Client Sample ID Summary Report**

Mitkem Workorder: E0424

Client Name: CH2M Hill, Inc.

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0424-01A	GW20IW	IR86-GW20IW-06B
E0424-01B	GW20IW	IR86-GW20IW-06B
E0424-01C	GW20IW	IR86-GW20IW-06B
E0424-01D	GW20IW	IR86-GW20IW-06B
E0424-01E	GW20IW	IR86-GW20IW-06B
E0424-01F	GW20IW	IR86-GW20IW-06B
E0424-02A	GW08IW	IR86-GW08IW-06B
E0424-02B	GW08IW	IR86-GW08IW-06B
E0424-02C	GW08IW	IR86-GW08IW-06B
E0424-02D	GW08IW	IR86-GW08IW-06B
E0424-02E	GW08IW	IR86-GW08IW-06B
E0424-02F	GW08IW	IR86-GW08IW-06B
E0424-03A	GW07	IR86-GW07-06B
E0424-03B	GW07	IR86-GW07-06B
E0424-03C	GW07	IR86-GW07-06B
E0424-03D	GW07	IR86-GW07-06B
E0424-03E	GW07	IR86-GW07-06B
E0424-03F	GW07	IR86-GW07-06B
E0424-04A	GW01	IR86-GW01-06B
E0424-04B	GW01	IR86-GW01-06B
E0424-04C	GW01	IR86-GW01-06B
E0424-04D	GW01	IR86-GW01-06B
E0424-04E	GW01	IR86-GW01-06B
E0424-04F	GW01	IR86-GW01-06B
E0424-05A	GW02IW	IR86-GW02IW-06B
E0424-05B	GW02IW	IR86-GW02IW-06B
E0424-05C	GW02IW	IR86-GW02IW-06B
E0424-05D	GW02IW	IR86-GW02IW-06B
E0424-05E	GW02IW	IR86-GW02IW-06B
E0424-05F	GW02IW	IR86-GW02IW-06B
E0424-06A	GW29IW	IR86-GW29IW-06B
E0424-06B	GW29IW	IR86-GW29IW-06B
E0424-06C	GW29IW	IR86-GW29IW-06B
E0424-06D	GW29IW	IR86-GW29IW-06B
E0424-06E	GW29IW	IR86-GW29IW-06B
E0424-06F	GW29IW	IR86-GW29IW-06B
E0424-07A	GW23IW	IR86-GW23IW-06B
E0424-07B	GW23IW	IR86-GW23IW-06B
E0424-07C	GW23IW	IR86-GW23IW-06B
E0424-07D	GW23IW	IR86-GW23IW-06B

** If client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"*

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0424-17C	GW03	IR86-GW03-06B
E0424-17D	GW03	IR86-GW03-06B
E0424-17E	GW03	IR86-GW03-06B
E0424-17F	GW03	IR86-GW03-06B
E0424-18A	AS428GW05	IR86-AS428-GW05-06B
E0424-18B	AS428GW05	IR86-AS428-GW05-06B
E0424-18C	AS428GW05	IR86-AS428-GW05-06B
E0424-18D	AS428GW05	IR86-AS428-GW05-06B
E0424-18E	AS428GW05	IR86-AS428-GW05-06B
E0424-18F	AS428GW05	IR86-AS428-GW05-06B

If client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (CLP Method OLC03.2)

Holding Times

Sampling Date: 04/06-07/06
Received Date: 04/07-08/06
Analysis Dates: 04/08-12/06

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of BFB.
No qualifications were required for the initial calibrations; however, qualifications were required for the continuing calibrations due to high %D values; see attached Form VIIs.

Internal Standards

All criteria were met with the exception of sample IR86-GW29IW-06B. Sample IR86-GW29IW-06B exhibited low internal standard area recovery for standard 1.4-dichlorobenzene-d4; therefore, qualify all associated compound positive results as estimated (J) and non-detected results as rejected (R), qualifier code: ISL.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying these qualifications.
- Apply the same data validation guidelines to any associated field QC blanks and all associated samples.
- Qualification are applied as stated in the table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method	< CRQL *	Not detected	No action
Method	< CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	> CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL but < blank result	Report the blank concentration for the sample with a "U" or qualify the data as unusable "R"
		> CRQL and ≥ blank result	Professional judgment
Method	= CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	Gross contamination	Positive	Qualify results as unusable "R"
Method	TIC >2 ug/L	Positive	Professional judgment
Storage	≥ CRQL *	Positive	Qualify results with a "J"
Storage	Grossly above CRQL *	Positive	Qualify results as unusable "R"

* 10X CRQL for methylene chloride and cyclohexane and 2X CRQL for 2-butane and acetone.

Note: Compounds for which there was no action required are not included in the following tables.

The associated holding blank was VHBLK5N (no positive results exhibited). There was no qualifications required based on method blank contamination. The associated field QC for this data package was: trip blank IR86-TB040606, IR86-TB040706, equipment blank IR86-EB040606, IR86-EB040706 and field blank IR86-FB040506. The method blanks associated with field QC blanks exhibited some contamination but the QC blanks were not qualified, per the request of the client.

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit
IR86-TB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-TB040706	methylene chloride	2.4 ug/L	0.50 ug/L
	chloroform	1.8	0.50
	dibromochloromethane	1.2	0.50
IR86-EB040606	methylene chloride	0.58 ug/L	0.50 ug/L
IR86-EB040706	methylene chloride	5.9 ug/L	0.50 ug/L
	chloroform	0.56	0.50
IR86-FB0405105	methylene chloride	0.50 ug/L	0.50 ug/L
	chloroform	0.84	0.50

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
IR86-GW20IW-06B, IR86-GW02IW-06B, IR86-GW17IW-06B	methylene chloride	CRQL	BL

Surrogates

All criteria were met with the following exceptions listed in the table below. Qualify all compounds associated with these DMCs as listed in the table.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW02IW-06B	2-butanone-d5	0%	42-171%	J/R	SSL
	trans-1,3-dichloropropene-d4	38%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW29IW-06B	chloroethane-d5	154%	60-126%	J	SSH
	chloroform-d	134%	80-123%		
	1,2-dichloroethane-d4	142%	78-129%		
	benzene-d6	150%	78-121%		
	1,2-dichloropropane-d6	138%	84-123%		
	toluene-d8	148%	77-120%		
	1,1,2,2-tetrachloroethane-d2	138%	75-131%		
	1,2-dichlorobenzene-d4	158%	50-150%		
IR86-GW01-06B	benzene-d6	74%	78-121%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	44%	80-128%		
	bromoform-d	50%	76-135%		

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW04IW-06B	2-butanone-d5	0%	42-171%	J/R	SSL
	trans-1,3-dichloropropene-d4	52%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW08IW-06B	trans-1,3-dichloropropene-d4	74%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW07-06B	trans-1,3-dichloropropene-d4	40%	80-128%	J/UJ	SSL
	bromoform-d	42%	76-135%		
IR86-GW23IW-06B	trans-1,3-dichloropropene-d4	56%	80-128%	J/UJ	SSL
	bromoform-d	48%	76-135%		
IR86-GW23IW-06BDUP	trans-1,3-dichloropropene-d4	72%	80-128%	J/UJ	SSL
	bromoform-d	74%	76-135%		
IR86-GW04IW-06BDUP	trans-1,3-dichloropropene-d4	44%	80-128%	J/UJ	SSL
	bromoform-d	50%	76-135%		
IR86-GW17DW-06B	trans-1,3-dichloropropene-d4	76%	80-128%	J/UJ	SSL
IR86-AS428-GW05-06B	trans-1,3-dichloropropene-d4	68%	80-128%	J/UJ	SSL

Laboratory Control Sample

No LCS was submitted with this data package.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample IR86-GW18IW-06B; no qualifications were required.

Field Duplicate Sample Summary

A field duplicate was submitted for samples IR86-GW23IW-06B and IR86-GW04IW-06B. There were no qualifications required for IR86-GW04IW-06B and the duplicate pair. Qualifications were required for sample IR86-GW23IW-06B and field duplicate IR86-GW23IW-06BDUP due to non-comparable results. Compounds vinyl chloride (200% RPD), trans-1,2-dichloroethene (78% RPD), benzene (63% RPD) and 1,1-dichloroethene (70% RPD) were qualified as estimated (J/UJ), qualifier code: FD.

Specific Comments:

All sample results were reported within the calibration range of the instruments. A dilution was required for samples IR86-GW20IW-06B, IR86-GW29IW-06B, IR86-GW23IW-06B, IR86-GW23IW-06BDUP, IR86-GW04IW-06B and IR86-GW04IW-06BDUP; therefore, do not use the E-flagged compound results in the initial analysis in favor of the corresponding D-flagged compound result in the dilution.

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer Laura Muschenheim **Date:** 6/28/06

5LCA

LOW CONCENTRATION WATER VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Lab File ID: V2H3920.D BFB Injection Date: 04/11/2006

Instrument ID: V2 BFB Injection Time: 9:02

GC Column: DB-624 ID: 0.25 (MM) Column Length: 30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.2
75	30.0 - 66.0% of mass 95	49.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 -120.0% of mass 95	81.7
175	4.0 - 9.0 % of mass 174	5.7 (7.0)1
176	93.0 - 101.0% of mass 174	80.4 (98.4)1
177	5.0 - 9.0% of mass 176	5.4 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0052Q	VSTD0052Q	V2H3921.D	04/11/2006	9:19
02	VBLK2Q	MB-23115	V2H3922.D	04/11/2006	9:59
03	GW01	E0424-04A	V2H3926.D	04/11/2006	12:13
04	GW20IWDL	E0424-01ADL	V2H3927.D	04/11/2006	12:43
05	GW04IW	E0424-10A	V2H3932.D	04/11/2006	15:17
06	GW04IWDUP	E0424-11A	V2H3933.D	04/11/2006	15:47
07	TB040706	E0424-12A	V2H3934.D	04/11/2006	16:20
08	EB040706	E0424-13A	V2H3935.D	04/11/2006	16:51
09	GW18DW	E0424-14A	V2H3936.D	04/11/2006	17:22
10	GW18DWMS	E0424-14AMS	V2H3937.D	04/11/2006	17:52
11	GW18DWMSD	E0424-14AMSD	V2H3938.D	04/11/2006	18:23
12	GW17IW	E0424-15A	V2H3939.D	04/11/2006	18:53
13	GW17DW	E0424-16A	V2H3940.D	04/11/2006	19:24
14	GW03	E0424-17A	V2H3941.D	04/11/2006	19:54
15	AS428GW05	E0424-18A	V2H3942.D	04/11/2006	20:25

7LCA

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Instrument ID: V2 Calibration Date: 04/11/2006 Time: 9:19

Lab File ID: V2H3921.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052Q Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.383	0.408		6.4	
Chloromethane	0.486	0.639		31.4	
Vinyl chloride	0.486	0.599	0.100	23.3	30.0
Bromomethane	0.384	0.402	0.100	4.7	30.0
Chloroethane	0.259	0.302		16.7	
Trichlorofluoromethane	0.579	0.762		31.5	
1,1-Dichloroethene	0.361	0.427	0.100	18.4	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.400	0.497		24.4	
Acetone	0.049	0.063		29.4	
Carbon disulfide	1.129	1.225		8.5	
Methyl acetate	0.127	0.106		-16.3	
Methylene chloride	0.435	0.414		-4.9	
trans-1,2-Dichloroethene	0.387	0.429		10.7	
Methyl tert-butyl ether	0.684	0.617		-9.7	
1,1-Dichloroethane	0.951	0.999	0.200	5.1	30.0
cis-1,2-Dichloroethene	0.447	0.447		0.0	
2-Butanone	0.091	0.086		-5.9	
Bromochloromethane	0.194	0.184	0.050	-5.4	30.0
Chloroform	0.986	1.026	0.200	4.1	30.0
1,1,1-Trichloroethane	0.850	0.909	0.100	7.0	30.0
Cyclohexane	0.973	1.013		4.1	
Carbon tetrachloride	0.783	0.843	0.100	7.6	30.0
Benzene	2.194	2.280	0.400	3.9	30.0
1,2-Dichloroethane	0.467	0.445	0.100	-4.7	30.0
Trichloroethene	0.554	0.567	0.300	2.3	30.0
Methylcyclohexane	0.834	0.823		-1.3	

J/UJ

All other compounds must meet a minimum RRF of 0.010.

7LCC

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

Instrument ID: V2 Calibration Date: 04/11/2006 Time: 9:19

Lab File ID: V2H3921.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052Q Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Vinyl chloride-d3	0.333	0.523		57.2	
Chloroethane-d5	0.266	0.356		33.8	
1,1-Dichloroethene-d2	0.229	0.287		25.5	
2-Butanone-d5	0.072	0.079		9.7	
Chloroform-d	0.815	0.806		-1.1	
1,2-Dichloroethane-d4	0.358	0.326		-9.0	
Benzene-d6	1.931	2.007		3.9	
1,2-Dichloropropane-d6	0.643	0.656		2.0	
Toluene-d8	1.594	1.570		-1.5	
trans-1,3-Dichloropropene-d4	0.770	0.785		1.9	
2-Hexanone-d5	0.070	0.068		-2.3	
Bromoform-d	0.969	1.007		3.9	
1,1,2,2-Tetrachloroethane-d2	0.272	0.242		-11.1	
1,2-Dichlorobenzene-d4	1.012	0.934		-7.7	

8A

LOW VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

EPA Sample No.(VSTD005##): VSTD0052M Date Analyzed: 04/07/2006

Lab File ID (Standard): V2H3801.D Time Analyzed: 20:12

Instrument ID: V2

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

		IS1 (CBZ) AREA #	RT #	IS2 (DFB) AREA #	RT #	IS3 (DCB) AREA #	RT #
	12 HOUR STD	519786	10.04	628650	6.47	262940	12.93
	UPPER LIMIT	727700	10.37	880110	6.80	368116	13.26
	LOWER LIMIT	311872	9.71	377190	6.14	157764	12.60
	EPA SAMPLE NO.						
01	VBLK2M	493663	10.04	666768	6.47	199748	12.93
02	GW20IW	679543	10.03	895159*	6.48	288641	12.93
03	GW08IW	540275	10.04	707092	6.48	227487	12.93
04	GW07	489425	10.03	647047	6.48	227149	12.93
05	GW02IW	482656	10.03	612545	6.48	203523	12.93
06	GW29IW	386551	10.04	516835	6.47	155376*	12.93
07	GW23IW	555387	10.04	719163	6.47	231317	12.93
08	GW23IWDUP	481426	10.03	633863	6.47	191844	12.93
09	EB040606	521216	10.03	688784	6.47	204529	12.93

JR

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +40% of internal standard area
AREA LOWER LIMIT = -40% of internal standard area
RT UPPER LIMIT = +0.33 minutes of internal standard RT
RT LOWER LIMIT = -0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

page 1 of 1

2LCB

LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (BRF) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT	
01	VBLK2M	104	112	112	86	128	106	116	0	
02	GW20IW	100	108	94	72	84	106	110	0	
03	GW08IW	98	108	74 *	66	50 *	104	110	2	J/UJ
04	GW07	100	110	40 *	68	42 *	112	112	2	J/UJ
05	GW02IW	98	108	38 *	42	48 *	108	114	3	J/UJ
06	GW29IW	138 *	148 *	96	70	80	138 *	158 *	8	J
07	GW23IW	96	106	56 *	58	48 *	106	108	2	J/UJ
08	GW23IWDUP	104	112	72 *	62	74 *	106	120	2	J/UJ
09	EB040606	102	110	86	64	102	102	116	0	
10	VBLK2Q	98	112	108	76	122	112	114	0	
11	GW01	102	108	44 *	56	50 *	116	118	3	J/UJ
12	GW20IWDL	104	112	96	25 D	96	116	120	0	
13	GW04IW	92	102	52 *	52	50 *	112	118	3	J/UJ
14	GW04IWDUP	94	102	44 *	50	50 *	118	126	2	J/UJ
15	TB040706	96	106	84	54	96	118	114	0	
16	EB040706	94	106	82	58	92	110	120	0	
17	GW18DW	100	108	82	56	94	122	116	0	
18	GW18DWMS	100	108	82	64	98	122	122	0	
19	GW18DWMSD	92	100	76 *	60	90	110	114	1	
20	GW17IW	98	110	90	58	102	118	116	0	
21	GW17DW	98	106	76 *	58	92	116	118	1	J/UJ
22	GW03	96	106	80	50	92	114	124	0	
23	AS428GW05	102	108	68 *	52	90	116	120	1	J/UJ
24	VBLK2R	100	112	110	76	130	108	114	0	
25	GW29IWDL	100	108	100	60	115	100	115	0	
26	GW23IWDL	102	112	106	76	122	110	120	0	
27	GW23IWDUPDL	104	112	104	66	122	118	126	0	

		QC Limit
VDMC8 (DPA)	= 1,2-Dichloropropane-d6	(84-123)
VDMC9 (TOL)	= Toluene-d8	(77-120)
VDMC10 (TDP)	= trans-1,3-Dichloropropene-d4	(80-128)
VDMC11 (HEX)	= 2-Hexanone-d5	(37-169)
VDMC12 (BRF)	= Bromoform-d	(76-135)
VDMC13 (TCA)	= 1,1,2,2-Tetrachloroethane-d2	(75-131)
VDMC14 (DCZ)	= 1,2-Dichlorobenzene-d4	(50-150)

Column to be used to flag recovery values

* Values outside of contract required QC limits

ES-5038

Cambridge Isotope Laboratories, Inc.

50 Frontage Road, Andover, MA 01810-5413 USA
PH: 800.322.1174 (USA) PH: 978.749.8000
FAX: 978.749.2768 URL: www.isotope.com

MEMORANDUM

TO: CLP Low Concentration Organics Laboratories

FROM Cambridge Isotope Laboratories

SUBJECT: Volatiles DMC Standards

DATE: October 20, 2003

I would like to take this opportunity to clarify several issues regarding the Deuterated Monitoring Compound (DMC) standards used for EPA CLP SOW OLC03.2.

1. CIL uses deuterated Methanol (CD_3OD) as the solvent for the Volatiles secondary stock solutions that are provided to the labs. This is done to reduce the amount of deuterium back-exchange that may occur when exposed to unlabeled Methanol (CH_3OH). This will however result in a peak at m/z 36, which can be identified as a "laboratory artifact".
2. The Bromoform-d standard that is stabilized in deuterated methanol will, when diluted to working concentrations in unlabeled methanol, undergo a slow back-exchange. Therefore, while the initial analysis using fresh standard will have no native Bromoform contribution, over time, a small amount of native contribution may be observed.
3. 1,3-dichloropropene is manufactured only as a mix of *cis-* and *trans-* isomers that cannot be isolated. Our standard contains approximately 70:30 *cis-*:*trans-* isomers. The cis- isomer is not relevant to this method and may be considered a "laboratory artifact" as defined by the method.
4. Two unknown peaks have been found in the Volatiles DMC standard solutions. These peaks are low-level byproducts formed during production of deuterated methanol solvent, and may be detected during sample analysis. These peaks generally elute just after 1,1,2,2-Tetrachloroethane-d2 and just prior to 1,2-Dichlorobenzene-d4, depending on chromatographic conditions. These deuterated compounds, if detected, may also be considered as laboratory artifacts.

Please feel free to contact CIL to discuss any of these issues.

Kevin Millis
Regulatory Affairs Mgr.

10/21/03
Date

2LCA

LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0424

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #	
01	VBLK2M	104	110	92	118	98	106	112	
02	GW20IW	94	104	86	86	94	102	108	
03	GW08IW	94	110	90	68	98	98	106	
04	GW07	94	84	76	58	100	104	112	
05	GW02IW	108	114	102	0 *	102	112	108	J/R
06	GW29IW	130	154 *	128	102	134 *	142 *	150 *	J
07	GW23IW	80	86	86	52	96	98	102	
08	GW23IWDUP	108	118	104	72	102	108	112	
09	EB040606	100	114	90	80	100	108	110	
10	VBLK2Q	102	110	92	110	104	110	112	
11	GW01	80	78	78	44	86	74 *	88	J/UJ
12	GW20IWDL	104	112	100	72	108	120	108	
13	GW04IW	82	94	82	0 *	100	106	102	J/R
14	GW04IWDUP	94	100	92	78	106	114	104	
15	TB040706	92	102	86	80	104	110	104	
16	EB040706	94	104	90	76	102	112	102	
17	GW18DW	104	114	96	88	106	120	108	
18	GW18DWMS	98	108	106	82	108	122	106	
19	GW18DWMSD	90	98	98	78	100	110	96	
20	GW17IW	100	108	94	78	102	114	106	
21	GW17DW	102	110	92	86	104	114	104	
22	GW03	98	108	94	76	104	114	106	
23	AS428GW05	94	108	96	76	108	114	106	
24	VBLK2R	102	110	86	112	98	102	112	
25	GW29IWDL	92	108	85	85	92	100	108	
26	GW23IWDL	90	100	84	96	98	110	112	
27	GW23IWDUPDL	94	104	88	108	104	114	112	

			QC Limit
VDMC 1	(VCL)	= Vinyl chloride-d3	(49-138)
VDMC 2	(CLA)	= Chloroethane-d5	(60-126)
VDMC 3	(DCE)	= 1,1-Dichloroethene-d2	(65-130)
VDMC 4	(BUT)	= 2-Butanone-d5	(42-171)
VDMC 5	(CLF)	= Chloroform-d	(80-123)
VDMC 6	(DCA)	= 1,2-Dichloroethane-d4	(78-129)
VDMC 7	(BEN)	= Benzene-d6	(78-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: IR86-GW23IW-06B
Duplicate Sample ID: IR86-GW23IW-06BDUP

Water: RPD>30%
Soil: RPD>50%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
trans-1,2-dichloroethene	1.1	2.5	78
cis-1,2-dichloroethene	120	140	15
benzene	1.4	2.7	63
trichloroethene	0.67	0.84	23
1,1-dichloroethene	0.92	1.9	70
vinyl chloride	0	4.5	200
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

COMMENTS: Qualify vinyl chloride, trans-1,2-dichloroethene, benzene and 1,1-dichloroethene as estimated (J/UJ).

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: IR86-GW04IW-06B
Duplicate Sample ID: IR86-GW04IW-06BDUP

Water: RPD>30%
Soil: RPD>50%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
methyl tert-butyl ether	7.4	8.2	10
cis-1,2-dichloroethene	32	32	0
benzene	1.6	1.8	12
trichloroethene	1.4	1.6	13
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

COMMENTS: No qualifications required.

Initial Calibration Date: 3/28/2006

RRF and %RSD Calculations:

Compound Name: vinyl chloride
Lab Value: 0.4550

Area of Compound	668428
Area of Internal STD	293888
Conc. of Internal STD	5
Conc. of Compound	25
Calculated RRF	0.455

Compound Name: 4-methyl-2-pentanone
Lab Value: 4.700

RRF of STD 1	0.225
RRF of STD 2	0.234
RRF of STD 3	0.206
RRF of STD 4	0.227
RRF of STD 5	0.225
Calculated % RSD	4.658

Continuing Calibration File ID: 4/7/2006

RRF and %D Calculations:

Compound Name: chloromethane
Lab Value: 0.6280

Area of Compound	395105
Area of Internal STD	628650
Conc. of Internal STD	5
Conc. of Compound	5
Calculated RRF	0.628

Compound Name: styrene
Lab Value: 4.600

Average RRF	1.137
Calibration Check RRF	1.189
Calculated % D	-4.573

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (Methane, Ethane and Ethene- RSK-175)

Holding Times

Sampling Date: 4/6/06, 4/7/06
Received Date: 4/7-8/06
Preparation Date: 4/10/06
Analysis Dates: 4/10/06

All holding time requirements were met.

Calibrations

A five-point calibration curve was analyzed for the target compounds methane, ethane and ethene. RFs and %RSDs were calculated using the external standard method. All %RSDs were within QC limits. Continuing calibration standards were analyzed per the method. All %Ds were within QC limits in the CCVs analyzed.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Any compound detected in the sample, and the associated blank, must be qualified by elevating the result to the limit of detection or by adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.
- Sample weight, volume or dilution factor must be taken into consideration when applying the 5X criteria.
- Apply the same data validation guidelines to any associated rinse and field blanks and all associated samples.
- Qualification/Action codes:

U -	The sample result is greater than the RL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".
RL -	The sample result is less than the RL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the RL.
No Action -	The sample result is greater than the RL and greater than five times (5X) the blank value.
B -	The sample result is less than five times (5X) the blank value. (Region III)

Note: Compounds for which there was no action required are not included in the following tables.

The associated field QC blanks for this data package were trip blanks IR86-TB040606 and IR86-TB040706. Trip blank IR86-TB040606 was analyzed in SDG E0412. These trip blanks did not exhibit contamination. The associated field and rinse blank were not analyzed for this method. The method blank associated with the samples did not exhibit contamination.

Laboratory Control Sample

An LCS pair (LCS-23087) was submitted with this data package; all criteria were met.

Matrix Spike/Spike Duplicate Samples

There was no MS/MSD pair submitted for this SDG.

Field Duplicate Sample Summary

Two field duplicate pairs were submitted for this SDG.

Sample ID: **IR86-GW04IW-06B** **Duplicate Sample ID:** **IR86-GW04IW-06BDUP**

Compound	Sample Conc.	Duplicate Conc.	RPD
methane	590	620	5%

Sample ID: **IR86-GW23IW-06B** **Duplicate Sample ID:** **IR86-GW23IW-06BDUP**

Compound	Sample Conc.	Duplicate Conc.	RPD
methane	32	18	56%

Comments: No qualifications were required.

Specific Comments:

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer Jacqueline A Cleveland **Date:** 6/26/06

Initial Calibration Date: 10/16/002

RF and %RSD Calculations:

Compound Name: methane, Level 1
Lab Value: 3914.1260

Area of Compound	319538
Conc of Compd	100
Calculated RRF	3195

Compound Name: ethane
Lab Value: 3.250

RRF of STD 1	5696
RRF of STD 2	6153
RRF of STD 3	6193
RRF of STD 4	6002
RRF of STD 5	6012
Calculated % RSD	3.25

Continuing Calibration File ID: 4/10/06, 9:18AM

RF and %D Calculations:

Compound Name: ethane
Lab Value RRF: 5239
Lab Value %D: 12.8

Area of compound	10477449
Concentration	2000
Calculated RRF	5239

Average RRF	6011
Calibration Check RRF	5239
Calculated % D	12.8

Sample Calculation

Sample ID: IR86-GW20IW-06B
Standard ID: ICAL 10/16/06
Compound: methane
Concentration: 130 ug/L

Area of Compound	3824787
RRF of Compound	3238
Dilution Factor	1
Conc. PPM of gas (V/V)	1181.22

MD of gas (g/L)	0.658314
sample volume (ml)	37
headspace vol (ml)	5
Henry's Law constant	41300
Vol. Gas at constant T (L)	22.4
Temp. (K)	297
Temp. (°C)	24
constant	55.504
MW of gas (g/mol)	16.0426
Conc. Gas A (ug/L)	25.46709
Conc. Gas B (ug/L)	105.0828
Total Conc. Gas (ug/L)	**130.5499**

This SDG contains IC-300.0, Alkalinity, Ferric Fe, Ferrous Fe, Sulfide and TOC. Validation performed using analytical methods and laboratory SOPs. Fe by 6010B was present in the data package but validation of this method was not requested or performed.

HOLDING TIMES

Sampling Date: 4/6/06, 4/7/06
Received Date: 4/7/06, 4/8/06
Preparation & Analysis Dates: 4/7 & 4/8- IC, 4/12- Alk., 4/7 & 4/8- Ferrous Fe, 4/12- Ferric Fe, 4/12- Sulfide, 4/11- TOC

All holding time requirements were met with the following exception. Ferrous Fe by SM3500D does not have a holding time per the method – it says to do the analysis as soon as possible. The lab assigns a 24-hour time to this method. The samples were analyzed ASAP on the day of receipt. In most cases this was within the 24 hour hold time assigned by Mitkem. If the analysis was not performed within 24 hours of sampling – the lab flagged the reported result with an H flag. Samples reported with an H flag are qualified as estimated J/UJ due to exceeded laboratory holding time.

CALIBRATIONS

The proper calibration procedures were followed for the various wet chemistry methods (EPA-300 IC, SM2320_W Alkalinity, SM4500 Sulfide, 415.1 TOC, SM3500D_W Ferrous Fe). All associated ICV/CCV criteria were met. Raw data was verified. There is no calibration method/requirements for the SM 3500-Fe-D for Ferric Fe. It is simply the total Fe result (analyzed by SW-846 method 6010B but not validated) minus the Ferrous Fe result.

BLANK SUMMARY

Blank qualification guidelines:

- No action is taken if an analyte is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying the criteria.
- Apply the same data validation guidelines to any associated calibration, preparation, and field QC blanks and all associated samples.
- Qualification/Action codes:

No Action - The sample result is greater than the RL and greater than five times (5X) the blank value.

U - The sample result is less than five times (5X) the blank value. Report the result as non-detect at the reported concentration or at the analyte/compound RL.

Blank Contamination and Qualification Summaries

Blank ID	Analyte	Concentration	Action Level	Q Flag
no contamination noted				

The concentration noted for the CCBs is the highest concentration in all the CCBs. However, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination. Negative contamination in a prep blank or CCB, if less than the analyte CRDL, is qualified based on professional judgement.

*Please Note: Field QC blanks were not analyzed for the Wet Chem methods.

MATRIX SPIKE/DUPLICATE SUMMARY

The MS/MD pair of sample IR86-GW20IW-06B performed for the wet chemistry fractions in this SDG exhibited acceptable recoveries and RPD for all parameters with the exception of nitrogen in the MS and chloride in the MSD in the IC 300.0 analysis. The associated analytical data was not qualified because the non-compliances were very slight and the other spike sample exhibited acceptable recoveries for the noted parameter.

The MS/MD pair of sample IR86-AS428-GW05-06B performed for the wet chemistry fractions in this SDG exhibited acceptable recoveries and RPD for all parameters with the exception of sulfate in the MS in the MSD in the IC 300.0 analysis. The analyte was recovered below the QC limits in both (86.3%/87.3%). Therefore all reported positive and non-detect results for sulfate in associated samples were qualified as estimated J/UJ. Sulfate was qualified as estimated J/UJ in the following samples: IR86-GW04IW-06B, IR86-GW04IW-06BDUP, IR86-GW18DW-06B, IR86-GW17IW-06B, IR86-GW17DW-06B, IR86-GW03-06B, and IR86-AS428-GW05-06B.

FIELD DUPLICATE SAMPLE SUMMARY

Note: Field duplicate results are assessed only if both results are above the CRDL.

Sample ID: **IR86-GW23IW-06B** **Duplicate Sample ID:** **IR86-GW23IW-06BDUP**

Analyte	Sample Conc.	Duplicate Conc.	RPD
chloride	19	19	0%
alkalinity	220	210	5%

Sample ID: **IR86-GW04IW-06B** **Duplicate Sample ID:** **IR86-GW04IW-06BDUP**

Analyte	Sample Conc.	Duplicate Conc.	RPD
chloride	21	21	0%
sulfate	51	51	0%
alkalinity	30	30	0%
ferrous Fe	3.1	3.1	0%

Comments: No qualifications were required.

SAMPLE RESULT VERIFICATION

Specific Comments:

Raw data was verified. Resubmissions were required for the IC and TOC fractions. For the IC fraction the ICAL summaries were missing and for the TOC fraction the ICAL raw data and summaries were missing from the data packages. ICAL summaries were received on 6/20/06. ICAL raw data was requested on 6/15/06 and again on 6/27/06. Response was received from the lab via e-mail on 6/27/06 regarding the TOC raw calibration data. According to the lab the instrument system does not provide raw data for the ICAL standards, only for injections labeled as samples (see enclosed e-mail from lab). Please note the lack of ICAL raw data for TOC fraction. Further resubmissions were required for IC sample raw data that was missing from the DP. Please see enclosed copies of all correspondence with the lab.

Final missing raw data rcd 6/28/06 JAC

Reviewer Jacqueline A Cleveland **Date:** 6/29/06

ANALYTICAL QC SUMMA[illegible] REPORT

CLIENT: CH2M Hill, Inc.
Work Order: E0424
Project: CTO-105 Camp Lejeune, Sites 35,73,86

TestCode: E300IC_W

Sample ID: E0424-01FMS | SampType: MS | TestCode: E300IC_W | Prep Date: 04/07/2006 | Run ID: IC1_060408A
Client ID: GW20IW | Batch ID: 23047 | Units: mg/L | Analysis Date: 04/07/2006 | SeqNo: 480712

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	36.61	2.0	16.00	21.55	94.2	90	110	0	0		
Nitrogen, Nitrate (As N)	1.111	0.13	1.000	0	111 *	90	110	0	0		S
Nitrogen, Nitrite (As N)	0.9192	0.13	1.000	0.01020	90.9	90	110	0	0		
Sulfate	44.18	5.0	40.00	5.414	96.9	90	110	0	0		

Sample ID: E0424-18FMS | SampType: MS | TestCode: E300IC_W | Prep Date: 04/08/2006 | Run ID: IC1_060408C
Client ID: AS428GW05 | Batch ID: 23066 | Units: mg/L | Analysis Date: 04/08/2006 | SeqNo: 480911

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	28.26	2.0	16.00	13.58	91.8	90	110	0	0		
Nitrogen, Nitrate (As N)	1.009	0.13	1.000	0	101	90	110	0	0		
Nitrogen, Nitrite (As N)	0.9370	0.13	1.000	0.01346	92.3	90	110	0	0		
Sulfate	46.09	5.0	40.00	11.56	86.3	90	110	0	0		S

Sample ID: E0424-01FMSD | SampType: MSD | TestCode: E300IC_W | Prep Date: 04/07/2006 | Run ID: IC1_060408A
Client ID: GW20IW | Batch ID: 23047 | Units: mg/L | Analysis Date: 04/07/2006 | SeqNo: 480713

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	35.84	2.0	16.00	21.55	89.3 *	90	110	36.61	2.14	20	S
Nitrogen, Nitrate (As N)	1.046	0.13	1.000	0	105	90	110	1.111	6.03	20	
Nitrogen, Nitrite (As N)	0.9333	0.13	1.000	0.01020	92.3	90	110	0.9192	1.53	20	
Sulfate	42.54	5.0	40.00	5.414	92.8	90	110	44.18	3.8	20	

Sample ID: E0424-18FMSD | SampType: MSD | TestCode: E300IC_W | Prep Date: 04/08/2006 | Run ID: IC1_060408C
Client ID: AS428GW05 | Batch ID: 23066 | Units: mg/L | Analysis Date: 04/08/2006 | SeqNo: 480912

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	28.33	2.0	16.00	13.58	92.2	90	110	28.26	0.24	20	
Nitrogen, Nitrate (As N)	1.058	0.13	1.000	0	106	90	110	1.009	4.74	20	
Nitrogen, Nitrite (As N)	0.9430	0.13	1.000	0.01346	93.0	90	110	0.9370	0.643	20	
Sulfate	46.50	5.0	40.00	11.56	87.3	90	110	46.09	0.887	20	S

see QAC 42204

* GW20IW - NO_3 ~~Cl~~ ↓ in MS - OK in MSD
SO_4 ↓ in MSD - OK in MS } NQ

* AS428GW05 SO_4 ↓ in MS & MSD J/UJ in all

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to CH2M Hill's CTO-105, Camp Lejeune, Site 86 project. Under this deliverable, analysis results are presented for sixteen aqueous samples that received at Mitkem on May 12, 2006, and logged in under Mitkem work order Number E0622. Client sample IDs were shortened due to limitations of the CLP data reporting forms. A table listing shortened sample ID, full Sample ID and laboratory sample ID follows the narrative.

The analyses were performed according to EPA CLP and other methods and reported in a CLP-type format for Level 4 deliverable with the exception of the RSK-175 and wet chemistry analyses. The analysis results for the RSK-175 and wet chemistry analyses are presented in the standard Mitkem format with full supporting raw data.

The following observation and/or deviations are observed for the following analyses:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting.
- M2 peak co-elution.
- M3 rising or falling baseline.
- M4 retention time shift.
- M5 miscellaneous – under this category, the justification is explained.

The enclosed report includes the originals of all data with the exception of logbook pages and certain initial calibrations. Photocopies of logbook pages are included, with the originals maintained on file at the laboratory. The originals of initial calibrations that are shared among several cases are maintained on file at the laboratory, with photocopies included in the data package.

2. Volatile Analysis (OLC03.2):

All samples were analyzed by the OLC03.2 procedure.

Trap used for instrument V2: O2 Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve. GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

cis-1,3-Dichloropropene-d4 was detected in method blanks and samples. The volatile organic deuterated monitoring compound spike solution contains both the cis- and trans-1,3-dichloropropene isomers. cis-1,3-Dichloropropene-d4 is not a dueterated monitoring compound for OLC03.2, while the trans isomer is. Please see the memorandum regarding the volatile DMC spike solution from Cambridge Isotope Laboratories, Inc. following the SDG Narrative. This compound is considered a laboratory artifact, and is not reported as a tentatively identified compound.

Please note two small TICs may also be detected in the method blanks and samples. These two TICs are impurities from the dueterated monitoring compound stock solution obtained from Cambridge Isotope Laboratories, Inc. These are also considered laboratory artifacts and are not reported as tentatively identified compounds.

The aqueous samples were HCl preserved to pH <2.

Surrogate recovery: recoveries were within QC acceptance criteria of the method.

Matrix spike/matrix spike duplicate: duplicate matrix spikes were performed on sample GW24IW. Percent recovery and replicate RPD were within the QC limits

Sample analysis: the following samples were reanalyzed at dilution: GW25IW (10X), GW30IW (10X), GW30IWDUP (8X), GW21IW (10X), GW27IW (10X) and GW10IW (40X). Alkanes were determined as tentatively identified compounds. The Alkane Narrative Report follows this narrative. No other unusual observation was made for the analysis.

3. Dissolved Gasses Analysis (RSK-175):

Samples were analyzed by the RSK-175 method for dissolved hydrocarbon gasses on instrument designated V7.

Lab control sample: spike recoveries were within the QC limits.

Matrix spike/matrix spike duplicate: duplicate matrix spikes were performed on sample GW24IW. Percent recovery and replicate RPD were within the QC limits with the exception of elevated recovery for methane. Please note that methane was native to the unspiked sample at a concentration requiring dilution, obscuring the smaller spike amount. Both the MS and MSD concentrations exceeded the instrument calibration range.

Sample analysis: due to concentrations exceeding the upper calibration range of the instrument, the following samples were reanalyzed at dilution: GW24IW (2X), GW30IW (2X), GW21IW (2X) and GW26IW (3X). No other unusual observations were made during sample analysis.

4. Wet Chemistry Analyses:

Samples were analyzed for the anions chloride, nitrate, nitrite and sulfate by EPA Method 300.0, total organic carbon by EPA Method 415.1, alkalinity by Standard Method SM 2320, total sulfides by method SM 4500-S-, and ferrous and ferric iron by method SM 3500-D. Ferric iron is determined by the difference between total iron and ferrous iron. Total iron was analyzed by EPA Method 6010B. Results for total iron are reported on the wet chemistry data sheets, with raw data included in the wet chemistry section of the data package. The data sheets list total iron as "iron", while ferric and ferrous iron are listed using the full analyte name. Please note that total iron results are reported in ug/L while the remainder of the wet chemistry results are reported in mg/L.

Lab control sample: spike recoveries were within the QC limits for chloride, nitrate, nitrite, sulfate, total organic carbon, alkalinity, sulfide, ferrous iron and total iron.

Matrix spike/duplicate: duplicate matrix spike analyses were performed on sample GW24IW for chloride, nitrate, nitrite and sulfate. Percent recoveries exceeded the QC limits for chloride and nitrate in both the MS and MSD. Matrix spike and duplicate analyses were also performed on sample GW24IW for alkalinity, total organic carbon, ferrous iron, sulfide and total iron. Percent recoveries and replicate RPD were within the QC limits.

Sample analysis: while there is no "official" holding time listed in the test method, ferrous iron analyses are recommended to be performed as soon as possible. Mitkem assigns a 24hour holding time to this test. This analysis was performed as soon as possible on the day the samples were received at the laboratory. For samples whose ferrous iron could not be performed within the 24hour time period, their results are qualified with the "H" flag. Please note that these analyses were typically performed within a few hours of the 24hour period. No other unusual observation was made for the analysis.

All pages in this report have been numbered consecutively, starting with the title page and ending with a page saying only "Last Page of Data Report".

I certify that this data package is in compliance, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this

hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Edward A. Lawler
Laboratory Operations Manager
5/31/06

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY CH2M HILL	PHONE 757-671-8311 x451	COMPANY CH2M HILL	PHONE 704-329-0073 x	LAB PROJECT #: 227
NAME JAMES FRANK / FELICIA ARROYO	FAX 757-497-6885	NAME TEG WILLIAMS	FAX	
ADDRESS 5700 CLEVELAND ST STE 101		ADDRESS 4824 PARKWAY PLAZA BLVD STE 200		TURNAROUND TIME: STAT
CITY/ST/ZIP VIRGINIA BCH VIRGINIA		CITY/ST/ZIP CHARLOTTE NC 28217		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
SITE 86 CTO 105	328432.FI.FQ.86	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Fe2+/Alk/Anions	TOC	Ferric	Sulfides	Meth/Eth/Eth	VOC	COMMENTS
IR86-GW09-063							F0622								
~~IR86-3~~	5-11-06 1120			✓			01	8	1	1	1	1	2	2	
IR86-GW25IW-06B	5-10-06 1150			✓			03	8	1	1	1	1	2	2	
IR86-GW34IW-06B	5-10-06 1430			✓			05	8	1	1	1	1	2	2	
IR86-GW33DW-06B	5-10-06 2000			✓			04	8	1	1	1	1	2	2	
IR86-GW6DW-06B	5-11-06 1400			✓			05	8	1	1	1	1	2	2	
IR86-GW21IW-06B	5-10-06 1350			✓			06	24	3	3	3	3	6	6	TRIPLICATE FOR MS/MSD
IR86-GW33DW-06B DUP	5-10-06 2000			✓			07	8	1	1	1	1	2	2	
IR86-GW27IW-06B	5-10-06 1530			✓			08	8	1	1	1	1	2	2	
IR86-GW30IW-06B	5-10-06 1740			✓			09	8	1	1	1	1	2	2	
IR86-GW30IW-06B DUP	5-10-06 1740			✓			10	8	1	1	1	1	2	2	
IR86-GW21IW-06B	5-10-06 1945			✓			11	8	1	1	1	1	2	2	
IR86-GW10IW-06B	5-11-06 1005			✓			12	8	1	1	1	1	2	2	

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
	James E Frank	5-11-06 2100	Derrick DeCort	5/12/06 9:30
002		/		/
003		/		/

ADDITIONAL REMARKS:

COOLER TEMP: 3°C

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

MITKEM CORPORATION
Sample Condition Form

Page 1 of 1

Received By: [illegible] | Reviewed By: DKD | Date: 5/12/06 | MITKEM Workorder #: E0622

Client Project: CTO-105 | Client: CH2M-Hill

1) Cooler Sealed: Yes / No

2) Custody Seal(s): Present / Absent; Coolers / Bottles; Intact / Broken

3) Custody Seal Number(s): Date/Sign

4) Chain-of-Custody: Present / Absent

5) Cooler Temperature: 3°C / 5°C

Coolant Condition: OK / OK

6) Airbill(s): Present / Absent

Airbill Number(s):
7903-7402-2840
7903-9776-1525
7914-4925-8544

7) Sample Bottles: Intact/Broken/Leaking

8) Date Received: 5/12/06

9) Time Received: 09:30

Preservative Name/Lot No:

Lab Sample ID		Preservation (pH) HNO_3	H_2SO_4	HCl	NaOH	VOA Matrix	Soil Headspace or Air Bubbles ≥ 1/4"
E0622	01	<2			>12	H	
	02						
	03						
	04						
	05						
	06						
	07						
	08						
	09						
	10						
	11						
	12						
	13	<2			>12		
	14						
	15						
E0622	16	<2 DKD 5/12				H	

5/12/06

VOA Matrix Key:

US = Unpreserved Soil	**A** = Air
UA = Unpreserved Aqu.	**H** = HCl
M= MeOH	**E** = Encore
N = $NaHSO_4$	**F** = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

*Mitkem and Client Sample ID Summary Report**

Mitkem Workorder: E0622

Client Name: CH2M Hill, Inc.

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0622-01A	GW09	IR86-GW09-06B
E0622-01B	GW09	IR86-GW09-06B
E0622-01C	GW09	IR86-GW09-06B
E0622-01D	GW09	IR86-GW09-06B
E0622-01E	GW09	IR86-GW09-06B
E0622-01F	GW09	IR86-GW09-06B
E0622-02A	GW25IW	IR86-GW25IW-06B
E0622-02B	GW25IW	IR86-GW25IW-06B
E0622-02C	GW25IW	IR86-GW25IW-06B
E0622-02D	GW25IW	IR86-GW25IW-06B
E0622-02E	GW25IW	IR86-GW25IW-06B
E0622-02F	GW25IW	IR86-GW25IW-06B
E0622-03A	GW34IW	IR86-GW34IW-06B
E0622-03B	GW34IW	IR86-GW34IW-06B
E0622-03C	GW34IW	IR86-GW34IW-06B
E0622-03D	GW34IW	IR86-GW34IW-06B
E0622-03E	GW34IW	IR86-GW34IW-06B
E0622-03F	GW34IW	IR86-GW34IW-06B
E0622-04A	GW33DW	IR86-GW33DW-06B
E0622-04B	GW33DW	IR86-GW33DW-06B
E0622-04C	GW33DW	IR86-GW33DW-06B
E0622-04D	GW33DW	IR86-GW33DW-06B
E0622-04E	GW33DW	IR86-GW33DW-06B
E0622-04F	GW33DW	IR86-GW33DW-06B
E0622-05A	GW19DW	IR86-GW19DW-06B
E0622-05B	GW19DW	IR86-GW19DW-06B
E0622-05C	GW19DW	IR86-GW19DW-06B
E0622-05D	GW19DW	IR86-GW19DW-06B
E0622-05E	GW19DW	IR86-GW19DW-06B
E0622-05F	GW19DW	IR86-GW19DW-06B
E0622-06A	GW24IW	IR86-GW24IW-06B
E0622-06B	GW24IW	IR86-GW24IW-06B
E0622-06C	GW24IW	IR86-GW24IW-06B
E0622-06D	GW24IW	IR86-GW24IW-06B
E0622-06E	GW24IW	IR86-GW24IW-06B
E0622-06F	GW24IW	IR86-GW24IW-06B
E0622-07A	GW33DWDUP	IR86-GW33DW-06BDUP
E0622-07B	GW33DWDUP	IR86-GW33DW-06BDUP
E0622-07C	GW33DWDUP	IR86-GW33DW-06BDUP
E0622-07D	GW33DWDUP	IR86-GW33DW-06BDUP

If client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"

Mitkem Sample ID	*Reported Client Sample ID*	*Full Client Sample ID*
E0622-07E	GW33DWDUP	IR86-GW33DW-06BDUP
E0622-07F	GW33DWDUP	IR86-GW33DW-06BDUP
E0622-08A	GW27IW	IR86-GW27IW-06B
)622-08B	GW27IW	IR86-GW27IW-06B
E0622-08C	GW27IW	IR86-GW27IW-06B
E0622-08D	GW27IW	IR86-GW27IW-06B
E0622-08E	GW27IW	IR86-GW27IW-06B
E0622-08F	GW27IW	IR86-GW27IW-06B
E0622-09A	GW30IW	IR86-GW30IW-06B
E0622-09B	GW30IW	IR86-GW30IW-06B
E0622-09C	GW30IW	IR86-GW30IW-06B
E0622-09D	GW30IW	IR86-GW30IW-06B
E0622-09E	GW30IW	IR86-GW30IW-06B
E0622-09F	GW30IW	IR86-GW30IW-06B
E0622-10A	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-10B	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-10C	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-10D	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-10E	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-10F	GW30IWDUP	IR86-GW30IW-06BDUP
E0622-11A	GW21IW	IR86-GW21IW-06B
E0622-11B	GW21IW	IR86-GW21IW-06B
E0622-11C	GW21IW	IR86-GW21IW-06B
E0622-11D	GW21IW	IR86-GW21IW-06B
E0622-11E	GW21IW	IR86-GW21IW-06B
E0622-11F	GW21IW	IR86-GW21IW-06B
E0622-12A	GW10IW	IR86-GW10IW-06B
E0622-12B	GW10IW	IR86-GW10IW-06B
E0622-12C	GW10IW	IR86-GW10IW-06B
E0622-12D	GW10IW	IR86-GW10IW-06B
E0622-12E	GW10IW	IR86-GW10IW-06B
E0622-12F	GW10IW	IR86-GW10IW-06B
E0622-13A	GW26IW	IR86-GW26IW-06B
E0622-13B	GW26IW	IR86-GW26IW-06B
E0622-13C	GW26IW	IR86-GW26IW-06B
E0622-13D	GW26IW	IR86-GW26IW-06B
E0622-13E	GW26IW	IR86-GW26IW-06B
E0622-13F	GW26IW	IR86-GW26IW-06B
E0622-14A	EB051106	IR86-EB051106
E0622-15A	FB051106	IR86-FB051106
E0622-16A	TB051106	IR86-TB051106
E0622-16B	TB051106	IR86-TB051106

If client sample ID has not been truncated, the full client sample ID is listed in the column labeled "Reported Client Sample ID"

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (CLP Method OLC03.2)

Holding Times

Sampling Date: 05/10-11/06
Received Date: 05/12/06
Analysis Dates: 05/15-19/06

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of BFB.
No qualifications were required for the initial calibrations; however, qualifications were required for the continuing calibrations due to high %D values; see attached Form VIIs.

Internal Standards

All criteria were met.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying these qualifications.
- Apply the same data validation guidelines to any associated field QC blanks and all associated samples.
- Qualification are applied as stated in the table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method	< CRQL *	Not detected	No action
Method	< CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	> CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL but < blank result	Report the blank concentration for the sample with a "U" or qualify the data as unusable "R"
		> CRQL and ≥ blank result	Professional judgment
Method	= CRQL *	< CRQL	Report CRQL value with a "U"
		≥ CRQL	Professional judgment
Method	Gross contamination	Positive	Qualify results as unusable "R"
Method	TIC >2 ug/L	Positive	Professional judgment
Storage	≥ CRQL *	Positive	Qualify results with a "J"
Storage	Grossly above CRQL *	Positive	Qualify results as unusable "R"

* 10X CRQL for methylene chloride and cyclohexane and 2X CRQL for 2-butane and acetone.

Note: Compounds for which there was no action required are not included in the following tables.

The associated holding blank was VHBLK2H (no positive results exhibited). There was no qualifications required based on method blank contamination. The associated field QC for this data package was: trip blank IR86-TB051106, equipment blank IR86-EB051106 and field blank IR86-FB051106. The method blanks associated with field QC blanks exhibited some contamination but the QC blanks were not qualified, per the request of the client.

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit
IR86-TB051106	methylene chloride	6.7 ug/L	0.50 ug/L
IR86-EB051106	methylene chloride	6.6 ug/L	0.50 ug/L
IR86-FB051105	methylene chloride	6.7 ug/L	0.50 ug/L

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
No qualifications required.			

Surrogates

All criteria were met with the following exceptions listed in the table below. Qualify all compounds associated with these DMCs as listed in the table.

Sample ID	Non-compliant DMC	% Rec	QC Limit	Q Flag	Qual Code
IR86-GW25IW-06B	1,1-dichloroethene-d2	260%	65-130%	J	SSH
IR86-GW27IW-06B	2-butanone-d5	22%	42-141%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	66%	80-128%	J/UJ	SSL
	bromoform-d	74%	76-135%		
IR-86-GW10IW-06B	chloroethane-d5	132%	60-126%	J	SSH
	1,1-dichloroethene-d2	0%	65-130%	J/R	SSL
	2-butanone-d5	0%	42-141%		
	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
	trans-1,3-dichloropropene-d4	38%	80-128%		
	bromoform-d	48%	76-135%		
IR86-TB051106	vinyl chloride-d3	40%	49-138%	J/UJ	SSL
IR86-GW21IW-06B	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
IR86-EB051106	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL
IR86-GW34IW-06B	1,2-dichloropropane-d6	82%	84-123%	J/UJ	SSL

Laboratory Control Sample

No LCS was submitted with this data package.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample IR86-GW24IW-06B; all criteria were met.

Field Duplicate Sample Summary

A field duplicate was submitted for samples IR86-GW33DW-06B and IR86-GW30IW-06B. Sample IR86-GW33DW-06B and duplicate sample IR86-GW33DW-06BDUP exhibited no positive results above the CRQL, no qualifications required. Sample IR86-GW30IW-06B and duplicate sample IR86-GW30IW-06BDUP exhibited non-comparable results for 1,1-dichloroethene with 200%RPD and trans-1,2-dichloroethene with 40% RPD, see "Field Duplicate Sample Summary" form for more details, qualify these compounds as estimated (J/UJ).

Specific Comments:

All sample results were reported within the calibration range of the instruments. A dilution was required for samples IR86-GW25IW-06B, IR86-GW30IW-06B, IR86-GW30IW-06BDUP, IR86-GW21IW-06B, IR86-GW27IW-06B and IR86-GW10IW-06B; therefore, do not use the E-flagged compound results in the initial analysis in favor of the corresponding D-flagged compound result in the dilution.

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer Laura Maschaoff **Date:** 6/28/06

5LCA

LOW CONCENTRATION WATER VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab File ID: V2H4800.D BFB Injection Date: 05/15/2006

Instrument ID: V2 BFB Injection Time: 10:43

GC Column: DB-624 ID: 0.25 (MM) Column Length: 30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	18.3
75	30.0 - 66.0% of mass 95	50.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 -120.0% of mass 95	85.9
175	4.0 - 9.0 % of mass 174	6.0 (7.0)1
176	93.0 - 101.0% of mass 174	81.0 (94.3)1
177	5.0 - 9.0% of mass 176	5.2 (6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0052D	VSTD0052D	V2H4801.D	05/15/2006	11:12
02	VBLK2D	MB-23696	V2H4802.D	05/15/2006	11:52
03	GW09	E0622-01F	V2H4803.D	05/15/2006	12:35
04	GW25IW	E0622-02F	V2H4804.D	05/15/2006	13:05
05	GW33DW	E0622-04F	V2H4806.D	05/15/2006	14:07
06	GW19DW	E0622-05F	V2H4807.D	05/15/2006	14:38
07	GW24IW	E0622-06F	V2H4808.D	05/15/2006	15:09
08	GW24IWMS	E0622-06FMS	V2H4809.D	05/15/2006	15:39
09	GW24IWMSD	E0622-06FMSD	V2H4810.D	05/15/2006	16:10
10	GW33DWDUP	E0622-07F	V2H4811.D	05/15/2006	16:41
11	GW27IW	E0622-08F	V2H4812.D	05/15/2006	17:12

7LCA

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/15/2006 Time: 11:12

Lab File ID: V2H4801.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052D Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D	
Dichlorodifluoromethane	0.383	0.526		37.2		J/UJ
Chloromethane	0.486	0.525		8.0		
Vinyl chloride	0.486	0.561	0.100	15.5	30.0	
Bromomethane	0.384	0.454	0.100	18.3	30.0	
Chloroethane	0.259	0.321		24.0		
Trichlorofluoromethane	0.579	0.952		64.3		J/UJ
1,1-Dichloroethene	0.361	0.403	0.100	11.7	30.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.400	0.498		24.6		
Acetone	0.049	0.049		0.6		
Carbon disulfide	1.129	1.288		14.1		
Methyl acetate	0.127	0.106		-16.3		
Methylene chloride	0.435	0.376		-13.6		
trans-1,2-Dichloroethene	0.387	0.417		7.7		
Methyl tert-butyl ether	0.684	0.690		0.9		
1,1-Dichloroethane	0.951	0.957	0.200	0.7	30.0	
cis-1,2-Dichloroethene	0.447	0.463		3.6		
2-Butanone	0.091	0.056		-38.7		
Bromochloromethane	0.194	0.211	0.050	8.5	30.0	
Chloroform	0.986	0.917	0.200	-7.0	30.0	
1,1,1-Trichloroethane	0.850	1.077	0.100	26.8	30.0	
Cyclohexane	0.973	0.963		-1.0		
Carbon tetrachloride	0.783	1.017	0.100	29.9	30.0	
Benzene	2.194	2.346	0.400	6.9	30.0	
1,2-Dichloroethane	0.467	0.501	0.100	7.2	30.0	
Trichloroethene	0.554	0.646	0.300	16.6	30.0	
Methylcyclohexane	0.834	0.910		9.1		

All other compounds must meet a minimum RRF of 0.010.

7LCB

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/15/2006 Time: 11:12

Lab File ID: V2H4801.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052D Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.547	0.505		-7.8	
Bromodichloromethane	0.598	0.681	0.200	14.0	30.0
cis-1,3-Dichloropropene	0.730	0.786	0.200	7.7	30.0
4-Methyl-2-pentanone	0.223	0.131		-41.4	
Toluene	1.990	2.150	0.400	8.1	30.0
trans-1,3-Dichloropropene	0.524	0.584	0.100	11.4	30.0
1,1,2-Trichloroethane	0.250	0.242	0.100	-3.2	30.0
Tetrachloroethene	0.419	0.579	0.100	38.3	30.0
2-Hexanone	0.160	0.098		-38.8	
Dibromochloromethane	0.365	0.419	0.100	14.7	30.0
1,2-Dibromoethane	0.259	0.269	0.100	3.9	30.0
Chlorobenzene	1.286	1.435	0.500	11.6	30.0
Ethylbenzene	3.295	2.481	0.100	-24.7	30.0
Xylenes (Total)	0.725	0.865	0.300	19.3	30.0
Styrene	1.137	1.302	0.300	14.5	30.0
Bromoform	0.391	0.402	0.050	2.8	30.0
Isopropylbenzene	1.774	2.155		21.5	
1,1,2,2-Tetrachloroethane	0.277	0.256	0.100	-7.6	30.0
1,3-Dichlorobenzene	2.012	2.156	0.400	7.2	30.0
1,4-Dichlorobenzene	2.025	2.121	0.400	4.7	30.0
1,2-Dichlorobenzene	1.690	1.801	0.400	6.6	30.0
1,2-Dibromo-3-chloropropane	0.077	0.072		-6.2	
1,2,4-Trichlorobenzene	1.025	1.066	0.200	4.1	30.0
1,2,3-Trichlorobenzene	0.846	0.829	0.200	-2.0	30.0

All other compounds must meet a minimum RRF of 0.010.

J/W

7LCC

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/15/2006 Time: 11:12

Lab File ID: V2H4801.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052D Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Vinyl chloride-d3	0.333	0.278		-16.4	
Chloroethane-d5	0.266	0.235		-11.6	
1,1-Dichloroethene-d2	0.229	0.224		-2.0	
2-Butanone-d5	0.072	0.034		-52.8	
Chloroform-d	0.815	0.661		-18.9	
1,2-Dichloroethane-d4	0.358	0.288		-19.6	
Benzene-d6	1.931	1.583		-18.0	
1,2-Dichloropropane-d6	0.643	0.492		-23.5	
Toluene-d8	1.594	1.314		-17.5	
trans-1,3-Dichloropropene-d4	0.770	0.726		-5.8	
2-Hexanone-d5	0.070	0.033		-52.6	
Bromoform-d	0.969	0.873		-9.9	
1,1,2,2-Tetrachloroethane-d2	0.272	0.183		-32.8	
1,2-Dichlorobenzene-d4	1.012	0.802		-20.8	

5LCA

LOW CONCENTRATION WATER VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Lab File ID: V2H4830.D BFB Injection Date: 05/16/2006

Instrument ID: V2 BFB Injection Time: 10:15

GC Column: DB-624 ID: 0.25 (MM) Column Length: 30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	18.9
75	30.0 - 66.0% of mass 95	49.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.1 (0.1)1
174	50.0 -120.0% of mass 95	87.0
175	4.0 - 9.0 % of mass 174	6.0 (6.9)1
176	93.0 - 101.0% of mass 174	84.4 (97.1)1
177	5.0 - 9.0% of mass 176	5.7 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0052E	VSTD0052E	V2H4831.D	05/16/2006	10:43
02	VBLK2E	MB-23717	V2H4832.D	05/16/2006	12:20
03	GW30IW	E0622-09F	V2H4833.D	05/16/2006	13:01
04	GW30IWDUP	E0622-10F	V2H4834.D	05/16/2006	13:32
05	GW21IW	E0622-11F	V2H4835.D	05/16/2006	14:03
06	GW10IW	E0622-12F	V2H4836.D	05/16/2006	14:34
07	EB051106	E0622-14A	V2H4838.D	05/16/2006	15:36
08	FB051106	E0622-15A	V2H4839.D	05/16/2006	16:06
09	GW34IW	E0622-03F	V2H4840.D	05/16/2006	16:37
10	GW26IW	E0622-13F	V2H4841.D	05/16/2006	17:08
11	GW25IWDL	E0622-02FDL	V2H4842.D	05/16/2006	17:39
12	TB051106	E0622-16B	V2H4844.D	05/16/2006	18:40
13	GW30IWDL	E0622-09FDL	V2H4845.D	05/16/2006	19:11
14	GW30IWDUPDL	E0622-10FDL	V2H4846.D	05/16/2006	19:41
15	GW21IWDL	E0622-11FDL	V2H4847.D	05/16/2006	20:12

7LCA

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/16/2006 Time: 10:43

Lab File ID: V2H4831.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052E Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D	
Dichlorodifluoromethane	0.383	0.509		32.8		J/UJ
Chloromethane	0.486	0.598		23.0		
Vinyl chloride	0.486	0.628	0.100	29.2	30.0	
Bromomethane	0.384	0.481	0.100	25.3	30.0	
Chloroethane	0.259	0.354		36.7		
Trichlorofluoromethane	0.579	1.017		75.5		J/UJ
1,1-Dichloroethene	0.361	0.438	0.100	21.4	30.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.400	0.541		35.4		J/UJ
Acetone	0.049	0.054		10.9		
Carbon disulfide	1.129	1.440		27.5		
Methyl acetate	0.127	0.119		-6.0		
Methylene chloride	0.435	0.413		-5.2		
trans-1,2-Dichloroethene	0.387	0.470		21.3		
Methyl tert-butyl ether	0.684	0.741		8.4		
1,1-Dichloroethane	0.951	1.068	0.200	12.3	30.0	
cis-1,2-Dichloroethene	0.447	0.504		12.8		
2-Butanone	0.091	0.064		-30.0		
Bromochloromethane	0.194	0.229	0.050	17.8	30.0	
Chloroform	0.986	1.026	0.200	4.1	30.0	
1,1,1-Trichloroethane	0.850	1.094	0.100	28.8	30.0	
Cyclohexane	0.973	0.966		-0.7		
Carbon tetrachloride	0.783	1.016	0.100	29.7	30.0	
Benzene	2.194	2.428	0.400	10.6	30.0	
1,2-Dichloroethane	0.467	0.562	0.100	20.3	30.0	
Trichloroethene	0.554	0.658	0.300	18.8	30.0	
Methylcyclohexane	0.834	0.927		11.2		

All other compounds must meet a minimum RRF of 0.010.

7LCB

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/16/2006 Time: 10:43

Lab File ID: V2H4831.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052E Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.547	0.542		-1.0	
Bromodichloromethane	0.598	0.710	0.200	18.8	30.0
cis-1,3-Dichloropropene	0.730	0.816	0.200	11.8	30.0
4-Methyl-2-pentanone	0.223	0.151		-32.4	
Toluene	1.990	2.243	0.400	12.7	30.0
trans-1,3-Dichloropropene	0.524	0.598	0.100	14.1	30.0
1,1,2-Trichloroethane	0.250	0.262	0.100	4.8	30.0
Tetrachloroethene	0.419	0.574	0.100	37.1	30.0
2-Hexanone	0.160	0.109		-31.9	
Dibromochloromethane	0.365	0.425	0.100	16.3	30.0
1,2-Dibromoethane	0.259	0.288	0.100	11.2	30.0
Chlorobenzene	1.286	1.498	0.500	16.5	30.0
Ethylbenzene	3.295	2.548	0.100	-22.7	30.0
Xylenes (Total)	0.725	0.929	0.300	28.1	30.0
Styrene	1.137	1.351	0.300	18.8	30.0
Bromoform	0.391	0.406	0.050	3.8	30.0
Isopropylbenzene	1.774	2.289		29.1	
1,1,2,2-Tetrachloroethane	0.277	0.267	0.100	-3.6	30.0
1,3-Dichlorobenzene	2.012	2.254	0.400	12.0	30.0
1,4-Dichlorobenzene	2.025	2.183	0.400	7.8	30.0
1,2-Dichlorobenzene	1.690	1.836	0.400	8.7	30.0
1,2-Dibromo-3-chloropropane	0.077	0.082		6.8	
1,2,4-Trichlorobenzene	1.025	1.077	0.200	5.1	30.0
1,2,3-Trichlorobenzene	0.846	0.861	0.200	1.7	30.0

All other compounds must meet a minimum RRF of 0.010.

J/UJ

7LCC

LOW CONCENTRATION WATER VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

Instrument ID: V2 Calibration Date: 05/16/2006 Time: 10:43

Lab File ID: V2H4831.D Init. Calib. Date(s) 03/28/2006 03/28/2006

EPA Sample No.(VSTD005##): VSTD0052E Init. Calib. Times: 11:03 14:01

GC Column: DB-624 ID: 0.25 (MM) Length: 30 (M)

COMPOUND	$\overline{RRF}$	RRF5	MIN RRF	%D	MAX %D
Vinyl chloride-d3	0.333	0.296		-11.0	
Chloroethane-d5	0.266	0.257		-3.4	
1,1-Dichloroethene-d2	0.229	0.234		2.4	
2-Butanone-d5	0.072	0.039		-45.8	
Chloroform-d	0.815	0.709		-13.0	
1,2-Dichloroethane-d4	0.358	0.308		-14.0	
Benzene-d6	1.931	1.569		-18.8	
1,2-Dichloropropane-d6	0.643	0.514		-20.1	
Toluene-d8	1.594	1.302		-18.3	
trans-1,3-Dichloropropene-d4	0.770	0.704		-8.6	
2-Hexanone-d5	0.070	0.039		-44.0	
Bromoform-d	0.969	0.870		-10.2	
1,1,2,2-Tetrachloroethane-d2	0.272	0.196		-28.0	
1,2-Dichlorobenzene-d4	1.012	0.798		-21.2	

2LCA

LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01	VBLK2D	98	106	82	148	102	104	100
02	GW09	92	96	72	116	90	90	94
03	GW25IW	94	106	J 260 *	106	94	100	100
04	GW33DW	94	98	76	146	96	102	98
05	GW19DW	96	100	78	142	98	106	100
06	GW24IW	104	98	82	138	102	110	98
07	GW24IWMS	90	92	88	132	94	98	94
08	GW24IWMSD	96	96	92	134	98	102	94
09	GW33DWDUP	96	94	74	126	96	104	94
10	GW27IW	86	106	72	J/UJ 22 *	98	98	96
11	VBLK2E	94	96	74	114	92	94	102
12	GW30IW	98	96	80	80	92	96	104
13	GW30IWDUP	90	92	74	96	88	96	98
14	GW21IW	90	96	88	82	88	94	94
15	GW10IW	* 100	J 132 *	0 *	0 *	96	104	94
16	EB051106	88	92	J/R 74	J/R 104	92	98	94
17	FB051106	88	94	78	102	94	100	100
18	GW34IW	90	90	74	104	90	96	94
19	GW26IW	90	90	76	92	92	96	98
20	GW25IWDL	90	92	86	* 0 D	90	98	96
21	TB051106	J/UJ 40 *	98	74	102	94	102	100
22	GW30IWDL	* 0 D	90	74	* 0 D	90	94	96
23	GW30IWDUPDL	94	96	78	* 0 D	98	106	102
24	GW21IWDL	94	96	76	* 0 D	96	102	100
25	VBLK2H	104	108	86	94	98	102	102
26	GW27IWDL	98	102	86	* 0 D	92	94	100
27	GW10IWDL	100	100	82	84	94	98	94

			QC Limit
VDMC 1	(VCL)	= Vinyl chloride-d3	(49-138)
VDMC 2	(CLA)	= Chloroethane-d5	(60-126)
VDMC 3	(DCE)	= 1,1-Dichloroethene-d2	(65-130)
VDMC 4	(BUT)	= 2-Butanone-d5	(42-171)
VDMC 5	(CLF)	= Chloroform-d	(80-123)
VDMC 6	(DCA)	= 1,2-Dichloroethane-d4	(78-129)
VDMC 7	(BEN)	= Benzene-d6	(78-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

* no qual due to dilution

2LCB

LOW CONCENTRATION WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

ab Name: MITKEM CORPORATION Contract:

Lab Code: MITKEM Case No.: Client No.: _____ SDG No.: ME0622

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (BRF) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT
01	VBLK2D	86	100	98	124	98	94	100	0
02	GW09	84	94	92	94	98	90	96	0
03	GW25IW	88	98	98	108	100	98	106	1
04	GW33DW	84	96	92	118	104	102	104	0
05	GW19DW	88	100	98	122	110	108	106	0
06	GW24IW	84	98	96	114	106	98	108	0
07	GW24IWMS	84	94	90	102	94	98	100	0
08	GW24IWMSD	86	94	92	108	100	98	102	0
09	GW33DWDUP	86	94	90	114	102	102	104	0
10	GW27IW	88	98	66 *	118	74 *	108	108	3
11	VBLK2E	84	102	100	88	108	90	102	0
12	GW30IW	88	102	104	76	112	98	106	0
13	GW30IWDUP	84	94	96	74	98	92	102	0
14	GW21IW	82 *	92	94	84	102	88	102	1
15	GW10IW	82 *	94	38 *	100	48 *	102	110	6
16	EB051106	82 *	94	86	78	82	98	106	1
17	FB051106	84	98	82	84	82	98	110	0
18	GW34IW	82 *	96	80	90	88	98	102	1
19	GW26IW	84	96	84	84	84	96	106	0
20	GW25IWDL	* 78 D	96	80	* 0 D	80	92	106	0
21	TB051106	86	96	86	80	94	100	106	1
22	GW30IWDL	* 82 D	94	82	* 0 D	92	94	104	0
23	GW30IWDUPDL	88	102	92	* 0 D	104	100	112	0
24	GW21IWDL	86	98	92	* 0 D	104	100	108	0
25	VBLK2H	86	104	100	78	100	102	106	0
26	GW27IWDL	* 82 D	114	100	* 0 D	94	96	104	0
27	GW10IWDL	* 82 D	96	96	68	96	96	100	0

		QC Limit
VDMC8 (DPA)	= 1,2-Dichloropropane-d6	(84-123)
VDMC9 (TOL)	= Toluene-d8	(77-120)
VDMC10 (TDP)	= trans-1,3-Dichloropropene-d4	(80-128)
VDMC11 (HEX)	= 2-Hexanone-d5	(37-169)
VDMC12 (BRF)	= Bromoform-d	(76-135)
VDMC13 (TCA)	= 1,1,2,2-Tetrachloroethane-d2	(75-131)
VDMC14 (DCZ)	= 1,2-Dichlorobenzene-d4	(50-150)

Column to be used to flag recovery values

* Values outside of contract required QC limits

*no qual due to dilution

FORM II LCV-2 OLC03.2

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: IR86-GW30IW-06B
Duplicate Sample ID: IR86-GW30IW-06BDUP

Water: RPD>30%
Soil: RPD>50%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
vinyl chloride	2.7	1.4	63
1,1-dichloroethene	0.77	0	200
trans-1,2-dichloroethene	7	5.6	22
cis-1,2-dichloroethene	110	73	40
benzene	2.1	1.6	27
trichloroethene	18	17	6
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

COMMENTS: Qualify 1,1-dichloroethene and cis-1,2-dichloroethene as estimated (J).

Initial Calibration Date: 3/28/2006

RRF and %RSD Calculations:

Compound Name: vinyl chloride
Lab Value: 0.4550

Area of Compound	668428
Area of Internal STD	293888
Conc. of Internal STD	5
Conc. of Compound	25
Calculated RRF	0.455

Compound Name: 4-methyl-2-pentanone
Lab Value: 4.700

RRF of STD 1	0.225
RRF of STD 2	0.234
RRF of STD 3	0.206
RRF of STD 4	0.227
RRF of STD 5	0.225
Calculated % RSD	4.658

Continuing Calibration File ID: 5/19/2006

RRF and %D Calculations:

Compound Name: chloromethane
Lab Value: 0.4190

Area of Compound	742605
Area of Internal STD	1774010
Conc. of Internal STD	5
Conc. of Compound	5
Calculated RRF	0.419

Compound Name: benzene
Lab Value: 4.100

Average RRF	2.194
Calibration Check RRF	2.104
Calculated % D	4.102

SAMPLE CALCULATION

Sample ID: IR86-GW25IW-06B
Standard ID: 5/15/2006
Compound: dichlorodifluoromethane
Concnetration: 4.2 ug/L

	Water (ug/L)	Soil (ug/Kg)	Soil ug/Kg)
Area of Compound	696199		
Area of Internal STD	1580930		
Conc. of Internal (ng)	125		
RRF of Compound	0.526		
Dilution Factor	1	1	
Weight of Sample	NA		
Volume of Sample	25	NA	
% Moisture	NA		
Aliquot of methol	NA	NA	
Concentration	4.19	#DIV/0!	#DIV/0!

	RT of Internal STD	RT of Compound	RRT
Sample	6.396	1.781	0.278
Standard	6.701	1.82	0.272

Data Completeness

The data package was received intact and complete. Resubmissions were not required. (Methane, Ethane and Ethene- RSK-175)

Holding Times

Sampling Date: 5/10/06, 5/11/06
Received Date: 5/12/06
Preparation Date: 5/17/06
Analysis Dates: 5/17/06

All holding time requirements were met.

Calibrations

A five-point calibration curve was analyzed for the target compounds methane, ethane and ethene. RFs and %RSDs were calculated using the external standard method. All %RSDs were within QC limits. Continuing calibration standards were analyzed per the method. All %Ds were within QC limits in the CCVs analyzed.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Any compound detected in the sample, and the associated blank, must be qualified by elevating the result to the limit of detection or by adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.
- Sample weight, volume or dilution factor must be taken into consideration when applying the 5X criteria.
- Apply the same data validation guidelines to any associated rinse and field blanks and all associated samples.
- Qualification/Action codes:

U -	The sample result is greater than the RL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".
RL -	The sample result is less than the RL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the RL.
No Action -	The sample result is greater than the RL and greater than five times (5X) the blank value.
B -	The sample result is less than five times (5X) the blank value. (Region III)

Note: Compounds for which there was no action required are not included in the following tables.

The associated field QC blanks for this data package was trip blank IR86-TB-051106. This trip blank did not exhibit contamination. The associated field and rinse blank were not analyzed for this method. The method blank associated with the samples did not exhibit contamination.

Laboratory Control Sample

An LCS (LCS-23735) was submitted with this data package; all criteria were met.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for sample IR86-GW24IW-06B with this data package; all criteria were met, with the exception of methane which exhibited high recoveries due to the native abundance of the compound in the sample.

Field Duplicate Sample Summary

Two field duplicate pairs were submitted for this SDG.

Sample ID: **IR86-GW33DW-06B** **Duplicate Sample ID:** **IR86-GW33DW-06BDUP**

Compound	Sample Conc.	Duplicate Conc.	RPD
methane	69	67	3%

Sample ID: **IR86-GW30IW-06B** **Duplicate Sample ID:** **IR86-GW30IW-06BDUP**

Compound	Sample Conc.	Duplicate Conc.	RPD
methane	1300	840	43%

Comments: No qualifications were required.

Specific Comments:

Samples in this SDG required dilution to accurately quantitate the target compound methane for samples IR86-GW24IW-06B, IR86-GW30IW-06B, IR86-GW26IW-06B, and IR86-GW21IW-06B. For the samples requiring dilution, the reported E flagged results are rejected, R, in favor of the corresponding results in the dilution analysis. All other results reported in the dilution analysis are rejected, R, in favor of the results reported in the undiluted or lesser dilution of the sample extract.

Detection limits were acceptable. Raw data and calculations were verified.

As requested we have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Reviewer: Jacqueline A Cleveland **Date:** 6/15/06

Initial Calibration Date: 10/16/002
RF and %RSD Calculations:

Compound Name: methane, Level 1
Lab Value: 3914.1260

Area of Compound	319538
Conc of Compd	100
Calculated RRF	3195

Compound Name: ethane
Lab Value: 3.250

RRF of STD 1	5696
RRF of STD 2	6153
RRF of STD 3	6193
RRF of STD 4	6002
RRF of STD 5	6012
Calculated % RSD	3.25

Continuing Calibration File ID: 5/17/06, 11:33AM
RF and %D Calculations:

Compound Name: ethene
Lab Value RRF: 6279
Lab Value %D: -3.5

Area of compound	12558084
Concentration	2000
Calculated RRF	6279

Average RRF	6069
Calibration Check RRF	6279
Calculated % D	-3.5

Sample Calculation

Sample ID: IR86-GW33DW-06BDUP
Standard ID: ICAL 10/16/06
Compound: methane
Concentration: 67 ug/L

	Water ug/L
Area of Compound	1961338
RRF of Compound	3238
Dilution Factor	1
Conc. PP of gas	605.73

– slight dif. due to RRF rounding.

Total Conc = Conc sample + Conc headspace

Conc sample = $\frac{605.759 \cdot 55.504 - 16.0424}{41300}$ = 13.06 ug/L

Conc headspace = $605.759 \cdot 0.65261 \cdot \frac{5}{37}$ = 53.71 ug/L

Tconc = 13.06 + 53.71 = 66.77 ug/L ✓

This SDG contains IC-300.0, Alkalinity, Ferrous Fe, Ferric Fe, Sulfide and TOC. Validation performed using analytical methods and laboratory SOPs. Fe by 6010B was present in the data package but validation of this method was not requested or performed.

HOLDING TIMES

Sampling Date: 5/10/06, 5/11/06
Received Date: 5/12/06
Preparation & Analysis Dates: 5/12- IC, 5/16- Alk., 5/16- Ferrous Fe, 5/12- Ferric Fe, 5/15- Sulfide, 5/24- TOC

All holding time requirements were met with the following exception. Ferrous Fe by SM3500D does not have a holding time per the method – it says to do the analysis as soon as possible. The lab assigns a 24-hour time to this method. The samples were analyzed ASAP on the day of receipt. In most cases this was within the 24 hour hold time assigned by Mitkem. If the analysis was not performed within 24 hours of sampling – the lab flagged the reported result with an H flag. Samples reported with an H flag are qualified as estimated J/UJ due to exceeded laboratory holding time.

CALIBRATIONS

The proper calibration procedures were followed for the various wet chemistry methods (EPA-300 IC, SM2320_W Alkalinity, SM4500 Sulfide, 415.1 TOC, SM3500D_W Ferrous Fe). All associated ICV/CCV criteria were met. Raw data was verified. There is no calibration method/requirements for the SM 3500-Fe-D for Ferric Fe. It is simply the total Fe result (analyzed by SW-846 method 6010B but not validated) minus the Ferrous Fe result.

BLANK SUMMARY

Blank qualification guidelines:

- No action is taken if an analyte is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying the criteria.
- Apply the same data validation guidelines to any associated calibration, preparation, and field QC blanks and all associated samples.
- Qualification/Action codes:

No Action -	The sample result is greater than the RL and greater than five times (5X) the blank value.
U -	The sample result is less than five times (5X) the blank value. Report the result as non-detect at the reported concentration or at the analyte/compound RL.

Blank Contamination and Qualification Summaries

Blank ID	Analyte	Concentration	Action Level	Q Flag
no contamination noted				

The concentration noted for the CCBs is the highest concentration in all the CCBs. However, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination. Negative contamination in a prep blank or CCB, if less than the analyte CRDL, is qualified based on professional judgement.

*Please Note: Field QC blanks were not analyzed for the Wet Chem methods.

MATRIX SPIKE/DUPLICATE SUMMARY

The MS/MD pair of sampleIR86-GW24IW-06B performed for the wet chemistry fractions in this SDG exhibited acceptable recoveries and RPD for all parameters with the exception of chloride and nitrogen as nitrate in the IC 300.0 analysis. These two analytes exhibited recoveries above the QC limit – all positive results for Cl and nitrogen as nitrate were qualified as estimated J.

FIELD DUPLICATE SAMPLE SUMMARY

Note: Field duplicate results are assessed only if both results are above the CRDL.

Sample ID: **IR86-GW33DW-06B** **Duplicate Sample ID:** **IR86-GW33DW-06BDUP**

Analyte	Sample Conc.	Duplicate Conc.	RPD
chloride	27	18	40%
sulfate	22	19	15%
TOC	14	17	19%
alkalinity	130	170	27%

Sample ID: **IR86-GW30IW-06B** **Duplicate Sample ID:** **IR86-GW30IW-06BDUP**

Analyte	Sample Conc.	Duplicate Conc.	RPD
chloride	29	24	19%
sulfate	19	11	53%
alkalinity	410	260	45%

Comments: No qualifications were required.

SAMPLE RESULT VERIFICATION

Specific Comments:

Raw data was verified. Results reported less than the reporting limit were qualified as estimated J. Resubmissions were required for the IC and TOC fractions. For the IC fraction the ICAL summaries were missing and for the TOC fraction the ICAL raw data and summaries were missing from the data packages. ICAL summaries were received on 6/20/06. ICAL raw data was requested on 6/15/06 and again on 6/27/06. Response was received from the lab via e-mail on 6/27/06 regarding the TOC raw calibration data. According to the lab the instrument system does not provide raw data for the ICAL standards, only for injections labeled as samples (see enclosed e-mail from lab). Please note the lack of ICAL raw data for TOC fraction.

Reviewer JA Cleveland **Date:** 6/27/06

Mitkem Co[illegible]ration

Date: 27-May-06

CLIENT: CH2M Hill, Inc.
Work Order: E0622
Project: CTO-105 Camp Lejeune, Sites 35,73,86

ANALYTICAL QC SUMMARY REPORT

TestCode: **E300IC_W**

Sample ID: **MB-23674** SampType: **MBLK** TestCode: **E300IC_W** Prep Date: **5/12/06** Run ID: **IC1_060512A**
Client ID: **MB-23674** Batch ID: **23674** Units: **mg/L** Analysis Date: **5/12/06** SeqNo: **490905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	2.0									
Nitrogen, Nitrate (As N)	ND	0.13									
Nitrogen, Nitrite (As N)	ND	0.13									
Sulfate	ND	5.0									

Sample ID: **LCS-23674** SampType: **LCS** TestCode: **E300IC_W** Prep Date: **5/12/06** Run ID: **IC1_060512A**
Client ID: **LCS-23674** Batch ID: **23674** Units: **mg/L** Analysis Date: **5/12/06** SeqNo: **490906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	17.27	2.0	16.00	0	108	90	110	0	0		
Nitrogen, Nitrate (As N)	1.090	0.13	1.000	0	109	90	110	0	0		
Nitrogen, Nitrite (As N)	1.055	0.13	1.000	0	106	90	110	0	0		
Sulfate	43.06	5.0	40.00	0	108	90	110	0	0		

Sample ID: **E0622-06AMS** SampType: **MS** TestCode: **E300IC_W** Prep Date: **5/12/06** Run ID: **IC1_060512A**
Client ID: **GW24IW** Batch ID: **23674** Units: **mg/L** Analysis Date: **5/12/06** SeqNo: **490915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	41.26	2.0	16.00	22.90	115	90	110	0	0		S
Nitrogen, Nitrate (As N)	1.134	0.13	1.000	0.01620	112	90	110	0	0		S
Nitrogen, Nitrite (As N)	1.025	0.13	1.000	0.02840	99.6	90	110	0	0		
Sulfate	43.13	5.0	40.00	1.044	105	90	110	0	0		

Sample ID: **E0622-06AMSD** SampType: **MSD** TestCode: **E300IC_W** Prep Date: **5/12/06** Run ID: **IC1_060512A**
Client ID: **GW24IW** Batch ID: **23674** Units: **mg/L** Analysis Date: **5/12/06** SeqNo: **490916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	41.78	2.0	16.00	22.90	118	90	110	41.26	1.25	20	S
Nitrogen, Nitrate (As N)	1.255	0.13	1.000	0.01620	124	90	110	1.134	10.1	20	S
Nitrogen, Nitrite (As N)	1.013	0.13	1.000	0.02840	98.4	90	110	1.025	1.17	20	
Sulfate	43.02	5.0	40.00	1.044	105	90	110	43.13	0.236	20	

* CL J+
N@NO3 ↓

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Thursday, July 06, 2006 4:41 PM
Attach: E0458-16.RE.pdf; E0519-09.RE.pdf
Subject: Re: CH2MHILL CTO-105 Lejeune WO # E0458

Jackie--

Attached are the responses to both E0458 and E0519.

For E0458-16 and E0519-09 you are correct. Replacement pages are attached.

For E0458-15, the reported value is correct. We are doing the subtraction for ferric iron using the unrounded total iron and unrounded ferrous iron results, and then rounding the ferric iron difference after the calculation. Most of the time using the final rounded total iron and ferrous iron results on the data sheets produces the same number, but for E0458-16 it does not.

The calculation for E0458-15 is total iron at 20.437 ppm minus ferrous iron at 4.834 ppm = ferric iron at 15.60 ppm or rounded to 16 ppm.

Please let me know if you have any questions, or require additional information.

-- Ed

----- Original Message -----
From: Cleveland
To: Ed Lawler
Cc: Felicia Arroyo ; DataQual Environmental Services, LLC
Sent: Saturday, July 01, 2006 12:50
Subject: CH2MHILL CTO-105 Lejeune WO # E0458

Mr. Lawler,

In verifying reported results for the Ferric Iron fraction it appears that incorrect results were submitted for samples IR73-GWA47/322-06B (Lab sample ID E0458-15) and IR73-GWA47/322-06B (Lab sample ID E0458-16).

For IR73-GWA47/322-06B (Lab sample ID E0458-15, based on submitted raw data and the results form, the total iron result for this sample was 20mg/L or 20000 ug/L. Also, based on submitted raw data and the results form, the result for ferrous iron was 4.8 mg/L. Therefore, based on my calculation the reported result for ferric iron should be the total metal result minus the ferrous iron result - in this case 15mg/L. The value reported on the results Form is 16 mg/L. Please verify this result and resubmit a corrected results page or an explanation as necessary.

For sample IR73-GWA47/322-06B (Lab sample ID E0458-16), based on submitted raw data and the results form, the total iron result for this sample was 62mg/L or 62000 ug/L. Based on submitted raw data, the result for ferrous iron was 15 mg/L however the results form reports it as 3 mg/L. It appears that a dilution factor of 5 was not taken into consideration when the result was transcribed to the results form. Based on my calculation the reported result for ferric iron should be the total metal result minus the ferrous iron result - in this case 62 - 15 or 47mg/L. The value reported on the results Form is 59 mg/L. Please verify this result and resubmit a corrected results page or an explanation as necessary.

Don't hesitate to contact me if you have questions. Thank you!

Jackie

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Wednesday, July 05, 2006 2:47 PM
Subject: Re: Checking on Resubmission Requests

Hi Jackie--

I did receive your emails from 6/29 and 7/1. It appears that you are correct regarding the ferric iron calculations. I have to get these workorders "unlocked" so they can be corrected. This is somewhat time consuming, as their status in our system is "reported". I should be able to have corrected sheets submitted to you tomorrow.

For the ferrous iron on samples E0412-09 and E0412-18, they were filtered through 0.45 micron filters prior to analysis because they contained significant suspended solids, which the analyst believed would interfere with the colorimetric analysis. We filtered the sample aliquots prior to adding any reagents for ferrous iron. The presence of suspended material causes inaccurate readings in the colorimeter.

Please let me know if you require any additional information.

-- Ed

----- Original Message -----
From: Cleveland
To: Ed Lawler
Cc: DataQual Environmental Services, LLC ; Felicia Arroyo
Sent: Wednesday, July 05, 2006 10:34
Subject: Checking on Resubmission Requests

Mr. Lawler,

I hope you had a good holiday weekend! Would you let me know that you received my most recent e-mails (regarding ferrous iron calculations and dated 6/29/06 and 7/1/06) and give me status on those requests and the previously asked question regarding the filtering of the ferric iron samples. Thank you!

Jackie

Jacqueline Cleveland, VP
DataQual Environmental Services, LLC
137 Royallprairie Lane
O'Fallon, MO 63368-6986
636-352-9391
cleve137@charter.net

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Wednesday, June 28, 2006 1:43 PM
Attach: E0424,IC.pdf
Subject: Re: Additional resubmission request for E0424 IC DP

Jackie--

Attached is a PDF file containing the raw IC data for the samples listed below.

Please do not hesitate to contact me if you require additional information.

--Ed Lawler

> ----- Original Message -----
> **From:** Cleveland
> **To:** Ed Lawler
> **Cc:** Felicia Arroyo ; DataQual Environmental Services, LLC
> **Sent:** Wednesday, June 28, 2006 11:06
> **Subject:** Additional resubmission request for E0424 IC DP
>
> Mr. Lawler,
>
> In attempting to do a final verification of the sample results for the CH2M CTO-105 SDG E0424 for the IC fraction, I noticed that raw data for several samples is not present in the data package. Please provide raw data for the following samples:
>
> E0424-01
> E0424-02
> E0424-03
> E0424-04
> E0424-05
> E0424-06
> E0424-07
> E0424-08
>
> These samples are from the analysis date 4/7/06, IC1, Sequence # 060407B. If you have any questions please do not hesitate to contact me. Please let me know that you have received this request and the request for IC calibration data for SDG E0622 sent yesterday. Thank you.
>
> Jackie
>
> ---
>
> Jacqueline Cleveland, VP
> DataQual Environmental Services, LLC
> 137 Royallprairie Lane
> O'Fallon, MO 63368-6986
> 636-352-9391
> cleve137@charter.net

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Wednesday, June 28, 2006 1:45 PM
Attach: E0622.IC.ICAL.pdf
Subject: Re: IC Initial Calibration Summaries for E0622

Jackie--

Attached are the raw data for the IC ICAL for sequence 060512A.

I also received your email regarding ferrous iron. I'll respond ASAP to that one.

-- Ed

----- Original Message -----
From: Cleveland
To: Ed Lawler
Cc: Felicia Arroyo ; DataQual Environmental Services, LLC
Sent: Tuesday, June 27, 2006 20:03
Subject: IC Initial Calibration Summaries for E0622

Mr. Lawler,

In my initial resubmission request (e-mail dated 6/15/06) I requested initial calibration summaries and raw data for all 11 SDGs for the IC fraction. It appears that I received all ICAL summaries and raw data with the exception of SDG E0622. There were 10 files attached to the IC resubmission e-mail so perhaps this SDG did not get attached. The ICAL date for this SDG is 5/12/06. I went through all of the resubmitted files to make sure this ICAL was not also associated with another SDG but I did not find it. Please send the ICAL raw data and summary for the IC ICAL analyzed on 5/12/06 on IC1 sequence: 060512A. If you have any questions please do not hesitate to contact me. Thank you.

Jackie

Jacqueline Cleveland, VP
DataQual Environmental Services, LLC
137 Royallprairie Lane
O'Fallon, MO 63368-6986
636-352-9391
cleve137@charter.net

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Tuesday, June 27, 2006 2:23 PM
Subject: Re: Resubmission Request for CTO-105

Jackie--

I am afraid the Calibration Reports I already sent you are all our system can generate for initial calibrations. If we tell the system the "sample" being analyzed is a standard, it stores the data, and only prints it out as a Calibration Report. For the ICV and CCVs, we analyze them as "samples" and hand-calculate the result. This is a limitation of the software in our TOC analyzer.

If there is anything else I can provide, please let me know.

-- Ed

----- Original Message -----
From: Cleveland
To: Edward A Lawler
Cc: Felicia Arroyo ; DataQual Environmental Services, LLC
Sent: Tuesday, June 27, 2006 13:03
Subject: Re: Resubmission Request for CTO-105

Mr. Lawler,

I received the pdf file calibration summary resubmissions for the TOC fraction. However, you did not provide raw data for those ICALs. Is it possible to provide me with the ICAL supporting raw data? Please let me know if this is possible and when I might expect the raw data. Thank you for your assistance!

Jackie

----- Original Message -----

From: Edward A Lawler
To: Cleveland
Sent: Tuesday, June 20, 2006 12:54 PM
Subject: Re: Resubmission Request for CTO-105

Hi Jackie--

Attached are the initial calibration data for TOC analyses.

The PDF file contains two pages, for the two ICALs analyzed in conjunction with the Camp Lejeune samples.

The first one, performed on 2/14/06 applies to all samples in Mitkem SDGs E0412 through and including E0492.

The second one, performed on 5/2/06 applies to samples in Mitkem SDGs E0519 through E0525.

I will be out of the office on Wed and Thurs this week. Please let me know if you require any additional information.

-- Ed

Cleveland

Copy for TOC pkgs.

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Tuesday, June 20, 2006 12:54 PM
Attach: E0412.TOC.ICAL.pdf
Subject: Re: Resubmission Request for CTO-105

Hi Jackie--

Attached are the initial calibration data for TOC analyses.

The PDF file contains two pages, for the two ICALs analyzed in conjunction with the Camp Lejeune samples.

The first one, performed on 2/14/06 applies to all samples in Mitkem SDGs E0412 through and including E0492.

The second one, performed on 5/2/06 applies to samples in Mitkem SDGs E0519 through E0525.

I will be out of the office on Wed and Thurs this week. Please let me know if you require any additional information.

-- Ed

> ----- Original Message -----
> **From:** Cleveland
> **To:** Edward A Lawler
> **Cc:** Felicia Arroyo ; DataQual Environmental Services, LLC
> **Sent:** Friday, June 16, 2006 14:42
> **Subject:** Re: Resubmission Request for CTO-105
>
> Thanks for getting back to me Mr. Lawler. I hope the audit goes well. I will expect the resubmissions next week.
>
> Jackie
>
> > ----- Original Message -----
> > **From:** Edward A Lawler
> > **To:** Cleveland
> > **Sent:** Friday, June 16, 2006 1:11 PM
> > **Subject:** Re: Resubmission Request for CTO-105
> >
> > Hi Jackie--
> >
> > We received your two requests, and should have something back to you first thing next week.
> >
> > We are in the final day of our NELAC audit (through the State of NJ), so we have not had much "free" time.
> >
> > -- Ed Lawler
> >
> > > ----- Original Message -----
> > > **From:** Cleveland
> > > **To:** Ed Lawler
> > > **Cc:** DataQual Environmental Services, LLC ; Felicia Arroyo
> > > **Sent:** Friday, June 16, 2006 10:26
> > > **Subject:** Resubmission Request for CTO-105

435

Mr. Lawler,

Good Morning. I have an additional request for resubmissions for the IC 300.0 fraction an a clarification question for the RSK-175 method.

For the IC 300.0 fraction: Several work-orders do not contain the hand-written ICV and CCV recovery information on the summary run logs. This information is required. This affects the following work-order numbers:
E0520
E0492
E0519
E0450
E0525
E0458 (for 4/12/06 sequence only)

For the RSK-175 fraction: Please verify the total volume of the VOA vials. I believe it is 42 ml but cannot find confirmation of that in the data package. Also, please send me a copy of the RSK-175 SOP your lab uses for this analysis.

Please acknowledge this e-mail so I know you have received this request and the one I sent yesterday. If you have any questions do not hesitate to contact me. I appreciate your help in this matter! Have a good day.

Jackie Cleveland

Jacqueline Cleveland, VP
DataQual Environmental Services, LLC
137 Royallprairie Lane
O'Fallon, MO 63368-6986
636-352-9391
cleve137@charter.net

Copy for all IC SDGs

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Monday, June 19, 2006 3:37 PM
Attach: E0525.IC.CALIB.pdf; E0424.IC.CALIB.pdf; E0443.IC.CALIB.pdf; E0444.IC.CALIB.pdf; E0450.IC.CALIB.pdf; E0458.IC.CALIB.pdf; E0492.IC.CALIB.pdf; E0519.IC.CALIB.pdf; E0520.IC.CALIB.pdf; E0412.IC.CALIB.pdf
Subject: IC-- Re: Resubmission Request for CTO-105

Hi Jackie--

Attached are PDF files for the IC data. There is one file for each SDG. The files include the ICAL information, as well as the ICV/CCV percentage notations.

The data for the TOC analyses will follow tomorrow.

Information on the RSK-175 will follow in a few minutes in a separate email.

Please do not hesitate to contact me if you have any questions or require additional information.

-- Ed Lawler

----- Original Message -----
From: Cleveland
To: Ed Lawler
Cc: DataQual Environmental Services, LLC ; Felicia Arroyo
Sent: Friday, June 16, 2006 10:26
Subject: Resubmission Request for CTO-105

Mr. Lawler,

Good Morning. I have an additional request for resubmissions for the IC 300.0 fraction an a clarification question for the RSK-175 method.

For the IC 300.0 fraction: Several work-orders do not contain the hand-written ICV and CCV recovery information on the summary run logs. This information is required. This affects the following work-order numbers:
E0520
E0492
E0519
E0450
E0525
E0458 (for 4/12/06 sequence only)

For the RSK-175 fraction: Please verify the total volume of the VOA vials. I believe it is 42 ml but cannot find confirmation of that in the data package. Also, please send me a copy of the RSK-175 SOP your lab uses for this analysis.

Please acknowledge this e-mail so I know you have received this request and the one I sent yesterday. If you have any questions do not hesitate to contact me. I appreciate your help in this matter! Have a good day.

Jackie Cleveland

Jacqueline Cleveland, VP

Cleveland

From: "Edward A Lawler" <elawler@mitkem.com>
To: "Cleveland" <cleve137@charter.net>
Sent: Monday, June 19, 2006 3:40 PM
Attach: 90.0060.pdf
Subject: RSK--Re: Resubmission Request for CTO-105

Copy for all RSK SDG's

Hi Jackie--

Attached is Mitkem's RSK-175 method SOP.

The VOA vials are 42mL I believe, but this value is not used in our calculations. We create 5mL of headspace in the vial, and determine the volume of sample by weight.

Please do not hesitate to call me if you have any questions or require additional information.

-- Ed Lawler

----- Original Message -----
From: Cleveland
To: Ed Lawler
Cc: DataQual Environmental Services, LLC ; Felicia Arroyo
Sent: Friday, June 16, 2006 10:26
Subject: Resubmission Request for CTO-105

Mr. Lawler,

Good Morning. I have an additional request for resubmissions for the IC 300.0 fraction an a clarification question for the RSK-175 method.

For the IC 300.0 fraction: Several work-orders do not contain the hand-written ICV and CCV recovery information on the summary run logs. This information is required. This affects the following work-order numbers:
E0520
E0492
E0519
E0450
E0525
E0458 (for 4/12/06 sequence only)

For the RSK-175 fraction: Please verify the total volume of the VOA vials. I believe it is 42 ml but cannot find confirmation of that in the data package. Also, please send me a copy of the RSK-175 SOP your lab uses for this analysis.

Please acknowledge this e-mail so I know you have received this request and the one I sent yesterday. If you have any questions do not hesitate to contact me. I appreciate your help in this matter! Have a good day.

Jackie Cleveland

Jacqueline Cleveland, VP
DataQual Environmental Services, LLC
137 Royallprairie Lane
O'Fallon, MO 63368-6986

Appendix G
Laboratory Reports (2009–2010)

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ07039

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 14, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB109-07-08-09D	KJ07039-001	Soil
1MS	IR86-SB109-07-08-09DMS	KJ07039-001MS	Soil
1MSD	IR86-SB109-07-08-09DMSD	KJ07039-001MSD	Soil
2	IR86-EB01-100609-SB	KJ07039-002	Water
2MS*	IR86-EB01-100609-SBMS	KJ07039-002MS	Water
2MSD*	IR86-EB01-100609-SBMSD	KJ07039-002MSD	Water
3	IR86-SS100-09D	KJ07039-004	Soil
3MS	IR86-SS100-09DMS	KJ07039-004MS	Soil
3MSD	IR86-SS100-09DMSD	KJ07039-004MSD	Soil
4	IR86-SB100-06-07-09D	KJ07039-006	Soil
5	IR86-SS109-09D	KJ07039-007	Soil
5MS*	IR86-SS109-09DMS	KJ07039-007MS	Soil
5MSD*	IR86-SS109-09DMSD	KJ07039-007MSD	Soil
6	IR86-EB01-100809	KJ07039-009	Water
6MS	IR86-EB01-100809MS	KJ07039-009MS	Water
6MSD	IR86-EB01-100809MSD	KJ07039-009MSD	Water
7	IR86-SB101-06-07-09D	KJ07039-010	Soil
8	IR86-SS104-0-0.5-09D	KJ07039-011	Soil
8MS*	IR86-SS104-0-0.5-09DMS	KJ07039-011MS	Soil
8MSD*	IR86-SS104-0-0.5-09DMSD	KJ07039-011MSD	Soil
9	IR86-SB105-05-06-09D	KJ07039-012	Soil
10	IR86-SB104-08-09-09D	KJ07039-013	Soil
11	IR86-EB01-100909-SB	KJ07039-014	Water
11MS	IR86-EB01-100909-SBMS	KJ07039-014MS	Water
11MSD	IR86-EB01-100909-SBMSD	KJ07039-014MSD	Water
12	IR86-SS101-0-0.5-09D	KJ07039-015	Soil
13	IR86-SB102-07-08-09D	KJ07039-016	Soil
14	IR86-SS102-0-0.5-09D	KJ07039-017	Soil
15	IR86-SS103-0-0.5-09D	KJ07039-018	Soil
16	IR86-SS103D-0-0.5-09D	KJ07039-019	Soil
17	IR86-SB103-08-09-09D	KJ07039-020	Soil

** MS/MSD - Mercury only*

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Aluminum	3.4	17.0	None	All >5X
Cadmium	0.013	0.065	U	4, 7, 9, 10, 13, 17
19380 - Mercury	0.011	0.055	U	4, 5, 7-10, 12-17
19422 - Mercury	0.074 ug/L	0.37 ug/L	U	2, 6, 11

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level mg/kg	Qualifier	Affected Samples
IR86-EB01-100609-SB	None - ND	-	-	-	-
IR86-EB01-100809	None - ND	-	-	-	-
IR86-EB01-100909-SB	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS%R/MSD%R/RPD	Qualifier	Affected Samples
1	Antimony	36%/43%	J/UJ	All soil samples
	Iron	183%/242%	J	
	Potassium	130%/140%		

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS103-0-0.5-09D mg/kg	IR86-SS103D-0-0.5-09D mg/kg	RPD	Qualifier
Aluminum	3400	5100	40%	None
Arsenic	1.5	1.8	18%	None
Barium	28	23	20%	None
Beryllium	0.19	0.17	11%	None
Cadmium	0.51	0.41	22%	None
Calcium	15000	22000	38%	None
Chromium	19	16	17%	None
Cobalt	0.95	1.3	31%	None
Copper	1.2	1.9	45%	None
Iron	2100	2700	25%	None
Lead	0.74	2.7	114%	J
Magnesium	520	700	30%	None
Manganese	17	20	16%	None
Nickel	3.3	4.3	26%	None
Potassium	410	460	11%	None
Selenium	0.26	0.34	27%	None
Sodium	130	130	0%	None
Vanadium	11	12	9%	None
Zinc	17	16	6%	None

Compound Quantitation - No discrepancies were identified.

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1208	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1020	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**9000**	~~B~~	**13**	**1.6**	**mg/kg**	**1**	
Antimony	7440-36-0	6010C	0.64	UJ ~~W~~	0.64	0.23	mg/kg	1	MSL
Arsenic	**7440-38-2**	**6010C**	**1.1**		**0.64**	**0.24**	**mg/kg**	**1**	
Barium	**7440-39-3**	**6010C**	**34**		**1.7**	**0.12**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.12**	J	**0.26**	**0.036**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.066**	~~B~~J	**0.13**	**0.013**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**2800**		**320**	**23**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**8.7**		**0.32**	**0.065**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**0.56**	J	**1.7**	**0.12**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**1.6**		**0.32**	**0.062**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**2900**	J	**6.4**	**2.1**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**12**		**0.64**	**0.12**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**280**	J	**320**	**24**	**mg/kg**	**2**	
Manganese	**7439-96-5**	**6010C**	**11**		**0.96**	**0.074**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**1.5**	J	**2.6**	**0.19**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**200**	J ~~J~~	**320**	**14**	**mg/kg**	**1**	MSH
Selenium	**7782-49-2**	**6010C**	**0.69**		**0.64**	**0.22**	**mg/kg**	**1**	
Silver	7440-22-4	6010C	0.32	U	0.32	0.054	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**22**	J	**320**	**22**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	3.2	U	3.2	0.33	mg/kg	1	
Vanadium	**7440-62-2**	**6010C**	**11**		**3.2**	**0.19**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**4.8**		**3.2**	**0.44**	**mg/kg**	**1**	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

2

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/13/2009 1304	CDF	10/12/2009 1800	19439
2	3005A	6010C	1	10/14/2009 1303	CDF	10/12/2009 1800	19439

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	2
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

3

TAL Metals

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-004**
Description: **IR86-SS100-09D**	Matrix: **Solid**
Date Sampled: **10/07/2009 1450**	% Solids: **89.7** **10/09/2009 0010**
Date Received: **10/08/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1221	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1037	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**3600**	~~B~~ E	**11**	**1.4**	**mg/kg**	**1**	
Antimony	7440-36-0	6010C	0.56 UJ	~~U~~	0.56	0.20	mg/kg	1	MSL
Arsenic	**7440-38-2**	**6010C**	**3.2**		**0.56**	**0.21**	**mg/kg**	**1**	
Barium	**7440-39-3**	**6010C**	**22**		**1.4**	**0.10**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.19**	J	**0.22**	**0.031**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.60**	~~B~~	**0.11**	**0.012**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**12000**		**280**	**20**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**23**		**0.28**	**0.056**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**2.5**		**1.4**	**0.10**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**1.0**		**0.28**	**0.054**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**2700**	J	**5.6**	**1.8**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**0.19**	J	**0.56**	**0.10**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**410**		**280**	**21**	**mg/kg**	**2**	
Manganese	**7439-96-5**	**6010C**	**14**		**0.84**	**0.064**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**7.3**	J	**2.2**	**0.17**	**mg/kg**	**1**	MSH
Potassium	**7440-09-7**	**6010C**	**480**		**280**	**12**	**mg/kg**	**1**	
Selenium	**7782-49-2**	**6010C**	**1.1**		**0.56**	**0.19**	**mg/kg**	**1**	
Silver	7440-22-4	6010C	0.28	U	0.28	0.047	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**180**	J	**280**	**19**	**mg/kg**	**1**	
Thallium	**7440-28-0**	**6010C**	**0.53**	J	**2.8**	**0.28**	**mg/kg**	**1**	
Vanadium	**7440-62-2**	**6010C**	**15**		**2.8**	**0.17**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**18**		**2.8**	**0.38**	**mg/kg**	**1**	

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
1/14/10

4

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1228	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1051	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**9600**	~~B~~	**12**	**1.6**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.61 UJ	~~U~~	0.61	0.22	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.47**	**J**	**0.61**	**0.23**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**14**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.054**	**J**	**0.24**	**0.034**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	~~0.041~~ 0.12	~~BJ~~ U	**0.12**	**0.013**	**mg/kg**	**1** MBL
Calcium	**7440-70-2**	**6010C**	**740**		**300**	**22**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**8.7**		**0.30**	**0.062**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.0**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.15**	**J**	**0.30**	**0.059**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2300** J		**6.1**	**2.0**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**7.0**		**0.61**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**340**		**300**	**22**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**8.2**		**0.91**	**0.070**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**1.6**	**J**	**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**220** J	~~B~~	**300**	**13**	**mg/kg**	**1** MSH
Selenium	7782-49-2	6010C	0.61	U	0.61	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.051	mg/kg	1
Sodium	7440-23-5	6010C	300	U	300	21	mg/kg	1
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**13**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**3.7**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1114/10

5

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1239	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1055	CDF	10/13/2009 1446	19378
3	3050B	6010C	2	10/21/2009 2035	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**3100**	~~B~~	**11**	**1.4**	**mg/kg**	**1**	
Antimony	7440-36-0	6010C	0.56 UJ	U	0.56	0.20	mg/kg	1	MSL
Arsenic	**7440-38-2**	**6010C**	**2.3**		**0.56**	**0.21**	**mg/kg**	**1**	
Barium	**7440-39-3**	**6010C**	**14**		**1.5**	**0.10**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.15**	**J**	**0.23**	**0.032**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.58**	~~B~~	**0.11**	**0.012**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**37000**		**560**	**40**	**mg/kg**	**3**	
Chromium	**7440-47-3**	**6010C**	**15**		**0.28**	**0.057**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**0.90**	**J**	**1.5**	**0.10**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**1.3**		**0.28**	**0.054**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**2100** J		**5.6**	**1.9**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**1.3**		**0.56**	**0.10**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**720**		**280**	**21**	**mg/kg**	**2**	
Manganese	**7439-96-5**	**6010C**	**14**		**0.84**	**0.065**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**4.8**		**2.3**	**0.17**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**360** J		**280**	**12**	**mg/kg**	**1**	MSH
Selenium	**7782-49-2**	**6010C**	**0.90**		**0.56**	**0.20**	**mg/kg**	**1**	
Silver	**7440-22-4**	**6010C**	**0.27**	**J**	**0.28**	**0.047**	**mg/kg**	**1**	
Sodium	**7440-23-5**	**6010C**	**220**	**J**	**280**	**19**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	2.8	U	2.8	0.29	mg/kg	1	
Vanadium	**7440-62-2**	**6010C**	**11**		**2.8**	**0.17**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**12**		**2.8**	**0.38**	**mg/kg**	**1**	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

6

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/13/2009 1308	CDF	10/12/2009 1800	19439
2	3005A	6010C	1	10/14/2009 1306	CDF	10/12/2009 1800	19439

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	2
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 11/4/10

7

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1242	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1058	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**14000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.60 UJ	~~U~~	0.60	0.22	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.49**	**J**	**0.60**	**0.23**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**20**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.058**	**J**	**0.24**	**0.034**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	~~0.022~~ 0.12	~~B~~ U	**0.12**	**0.013**	**mg/kg**	**1** MBL
Calcium	**7440-70-2**	**6010C**	**100**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**13**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.96**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.1**		**0.30**	**0.059**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2700** J		**6.0**	**2.0**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**13**		**0.60**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**570**		**300**	**22**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**12**		**0.91**	**0.070**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.0**	**J**	**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**360** J		**300**	**13**	**mg/kg**	**1** MSH
Selenium	7782-49-2	6010C	0.60	U	0.60	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.051	mg/kg	1
Sodium	7440-23-5	6010C	300	U	300	21	mg/kg	1
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**16**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**4.6**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

8

TAL Metals

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-011**
Description: **IR86-SS104-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/09/2009 1600**	% Solids: **85.1** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1245	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1101	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**6800**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	**7440-36-0**	**6010C**	**0.26** J	~~J~~	**0.59**	**0.21**	**mg/kg**	**1** MSL
Arsenic	**7440-38-2**	**6010C**	**1.7**		**0.59**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**17**		**1.5**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.081**	**J**	**0.24**	**0.033**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.93**	~~B~~	**0.12**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**20000**		**290**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**10**		**0.29**	**0.060**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.0**	**J**	**1.5**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**4.8**		**0.29**	**0.057**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3700** J		**5.9**	**1.9**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**27**		**0.59**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**620**		**290**	**22**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**26**		**0.88**	**0.068**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**3.1**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**240** J	~~J~~	**290**	**13**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.48**	**J**	**0.59**	**0.20**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.29	U	0.29	0.049	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**64**	**J**	**290**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.9	U	2.9	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**13**		**2.9**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**39**		**2.9**	**0.40**	**mg/kg**	**1**

PQL = Practical quantitation limit | B = Detected in the method blank | E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit | J = Estimated result < PQL and ≥ MDL | P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W" | N = Recovery is out of criteria | H = Out of holding time

CW
1/14/10

9

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1249	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1105	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**16000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.59	U J ~~U~~	0.59	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.91**		**0.59**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**17**		**1.5**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.036**	**J**	**0.24**	**0.033**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	~~0.014~~ 0.12 ~~BJ~~ U		**0.12**	**0.012**	**mg/kg**	**1** MBL
Calcium	**7440-70-2**	**6010C**	**240**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**14**		**0.30**	**0.060**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.4**	**J**	**1.5**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.19**	**J**	**0.30**	**0.057**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**4900**	J	**5.9**	**2.0**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**7.8**		**0.59**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**560**		**300**	**22**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**15**		**0.89**	**0.068**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.7**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**430**	J	**300**	**13**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.41**	**J**	**0.59**	**0.21**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.30	U	0.30	0.050	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**20**	**J**	**300**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**21**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**5.9**		**3.0**	**0.40**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1252	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1108	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**5800**	~~B~~	**13**	**1.6**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.64	UJ ~~U~~	0.64	0.23	mg/kg	1 MSL
Arsenic	7440-38-2	6010C	0.64	U	0.64	0.24	mg/kg	1
Barium	**7440-39-3**	**6010C**	**8.3**		**1.7**	**0.12**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.26	U	0.26	0.036	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	~~0.031~~ 0.12	~~BJ~~ U	**0.13**	**0.014**	**mg/kg**	**1** MBL
Calcium	**7440-70-2**	**6010C**	**50**	**J**	**320**	**23**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**6.9**		**0.32**	**0.065**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.58**	**J**	**1.7**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.52**		**0.32**	**0.062**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**1300**	J	**6.4**	**2.1**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**5.3**		**0.64**	**0.12**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**220**	**J**	**320**	**24**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**11**		**0.96**	**0.074**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**0.99**	**J**	**2.6**	**0.19**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**330**	J	**320**	**14**	**mg/kg**	**1** MSH
Selenium	7782-49-2	6010C	0.64	U	0.64	0.22	mg/kg	1
Silver	7440-22-4	6010C	0.32	U	0.32	0.054	mg/kg	1
Sodium	7440-23-5	6010C	320	U	320	22	mg/kg	1
Thallium	7440-28-0	6010C	3.2	U	3.2	0.33	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**7.7**		**3.2**	**0.19**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**3.6**		**3.2**	**0.44**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/13/2009 1329	CDF	10/12/2009 1800	19439
2	3005A	6010C	1	10/14/2009 1327	CDF	10/12/2009 1800	19439

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	2
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

12

TAL Metals

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-015**
Description: **IR86-SS101-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/09/2009 0930**	% Solids: **74.5** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1255	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1112	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**10000**	~~B~~	**13**	**1.7**	**mg/kg**	**1**	
Antimony	7440-36-0	6010C	0.67 UJ	~~U~~	0.67	0.24	mg/kg	1	MSL
Arsenic	**7440-38-2**	**6010C**	**1.4**		**0.67**	**0.25**	**mg/kg**	**1**	
Barium	**7440-39-3**	**6010C**	**23**		**1.7**	**0.12**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.14**	**J**	**0.27**	**0.038**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.46**	~~B~~	**0.13**	**0.014**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**6000**		**340**	**24**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**12**		**0.34**	**0.068**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**0.78**	**J**	**1.7**	**0.12**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**3.0**		**0.34**	**0.065**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**4000**	J	**6.7**	**2.2**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**12**		**0.67**	**0.12**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**590**		**340**	**25**	**mg/kg**	**2**	
Manganese	**7439-96-5**	**6010C**	**16**		**1.0**	**0.077**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**3.3**		**2.7**	**0.20**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**370**	J	**340**	**15**	**mg/kg**	**1**	MSH
Selenium	**7782-49-2**	**6010C**	**0.34**	**J**	**0.67**	**0.23**	**mg/kg**	**1**	
Silver	7440-22-4	6010C	0.34	U	0.34	0.056	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**32**	**J**	**340**	**23**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	3.4	U	3.4	0.34	mg/kg	1	
Vanadium	**7440-62-2**	**6010C**	**18**		**3.4**	**0.20**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**15**		**3.4**	**0.46**	**mg/kg**	**1**	

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

UW
11/4/10

13

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1259	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1115	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**19000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.60 UJ	~~U~~	0.60	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**2.6**		**0.60**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**21**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.093**	**J**	**0.24**	**0.033**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	~~0.034~~ 0.12	~~BJ~~ U	**0.12**	**0.013**	**mg/kg**	**1** MSL
Calcium	**7440-70-2**	**6010C**	**99**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**18**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.8**		**1.6**	**0.11**	**mg/kg**	**1**
Copper	7440-50-8	6010C	0.30	U	0.30	0.058	mg/kg	1
Iron	**7439-89-6**	**6010C**	**15000** J		**6.0**	**2.0**	**mg/kg**	**1** MSH
Lead	7439-92-1	6010C	0.60	U	0.60	0.11	mg/kg	1
Magnesium	**7439-95-4**	**6010C**	**700**		**300**	**22**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**19**		**0.90**	**0.069**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.7**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**490** J		**300**	**13**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.23**	**J**	**0.60**	**0.21**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.30	U	0.30	0.050	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**33**	**J**	**300**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**33**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**6.0**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1302	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1118	CDF	10/13/2009 1446	19378
3	3050B	6010C	50	10/16/2009 1139	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**5200**	~~B~~	**11**	**1.4**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.57 UJ	~~U~~	0.57	0.20	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**2.1**		**0.57**	**0.21**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**38**		**1.5**	**0.10**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.16**	**J**	**0.23**	**0.032**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.60**	~~B~~	**0.11**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**70000**		**14000**	**1000**	**mg/kg**	**3**
Chromium	**7440-47-3**	**6010C**	**12**		**0.28**	**0.057**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.8**		**1.5**	**0.10**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**6.0**		**0.28**	**0.055**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3300** J		**5.7**	**1.9**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**3.7**		**0.57**	**0.10**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**1900**		**280**	**21**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**79**		**0.85**	**0.065**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**5.5**		**2.3**	**0.17**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**1500** J		**280**	**12**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.39**	**J**	**0.57**	**0.20**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.28	U	0.28	0.048	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**380**		**280**	**19**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.8	U	2.8	0.29	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**10**		**2.8**	**0.17**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**21**		**2.8**	**0.38**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1306	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1129	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**3400**	~~B~~	**11**	**1.4**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.54 UJ	~~U~~	0.54	0.19	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**1.5**		**0.54**	**0.20**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**28**		**1.4**	**0.098**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.19**	**J**	**0.22**	**0.030**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.51**	~~B~~	**0.11**	**0.011**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**15000**		**270**	**19**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**19**		**0.27**	**0.055**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.95**	**J**	**1.4**	**0.10**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.2**		**0.27**	**0.052**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2100** J		**5.4**	**1.8**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**0.74** J		**0.54**	**0.10**	**mg/kg**	**1** FD
Magnesium	**7439-95-4**	**6010C**	**520**		**270**	**20**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**17**		**0.81**	**0.062**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**3.3**		**2.2**	**0.16**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**410** J		**270**	**12**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.26**	**J**	**0.54**	**0.19**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.27	U	0.27	0.045	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**130**	**J**	**270**	**19**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.7	U	2.7	0.28	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**11**		**2.7**	**0.16**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**17**		**2.7**	**0.37**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/4/10

TAL Metals

16

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1316	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1132	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**5100**	~~P~~	**11**	**1.4**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.54 UJ	~~U~~	0.54	0.19	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**1.8**		**0.54**	**0.20**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**23**		**1.4**	**0.098**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.17**	**J**	**0.22**	**0.030**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.41**	~~B~~	**0.11**	**0.011**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**22000**		**270**	**19**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**16**		**0.27**	**0.055**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.3**	**J**	**1.4**	**0.10**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.9**		**0.27**	**0.052**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2700** J		**5.4**	**1.8**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**2.7** J		**0.54**	**0.10**	**mg/kg**	**1** FD
Magnesium	**7439-95-4**	**6010C**	**700**		**270**	**20**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**20**		**0.81**	**0.063**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**4.3**		**2.2**	**0.16**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**460** J		**270**	**12**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.34**	**J**	**0.54**	**0.19**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.27	U	0.27	0.046	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**130**	**J**	**270**	**19**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.7	U	2.7	0.28	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**12**		**2.7**	**0.16**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**16**		**2.7**	**0.37**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
1/14/10

TAL Metals

7

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/15/2009 1319	CDF	10/13/2009 1446	19378
2	3050B	6010C	1	10/16/2009 1135	CDF	10/13/2009 1446	19378

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**15000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.58 UJ	~~U~~	0.58	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.79**		**0.58**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**20**		**1.5**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.040**	**J**	**0.23**	**0.033**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	~~0.026~~ 0.112	~~BJ~~	**0.12**	**0.012**	**mg/kg**	**1** U
Calcium	**7440-70-2**	**6010C**	**180**	**J**	**290**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**14**		**0.29**	**0.059**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.3**	**J**	**1.5**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.54**		**0.29**	**0.056**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3800** J		**5.8**	**1.9**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**11**		**0.58**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**630**		**290**	**21**	**mg/kg**	**2**
Manganese	**7439-96-5**	**6010C**	**19**		**0.87**	**0.067**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.3**		**2.3**	**0.17**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**480** J		**290**	**13**	**mg/kg**	**1** MSH
Selenium	**7782-49-2**	**6010C**	**0.30**	**J**	**0.58**	**0.20**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.29	U	0.29	0.049	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**31**	**J**	**290**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.9	U	2.9	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**18**		**2.9**	**0.17**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**6.9**		**2.9**	**0.39**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/09/2009 0010	BNW	10/08/2009 2115	19256

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.019**	**J**	**0.11**	**0.0076**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
1/14/10

2

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/13/2009 1444	BNW	10/12/2009 1700	19422

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Mercury	**7439-97-6**	**7470A**	**0.00011**	U ~~B~~	**0.00010**	**0.000053**	**mg/L**	**1**	MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
1/14/10

3

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-004**
Description: **IR86-SS100-09D**	Matrix: **Solid**
Date Sampled: **10/07/2009 1450**	% Solids: **89.7** **10/09/2009 0010**
Date Received: **10/08/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/09/2009 0023	BNW	10/08/2009 2115	19256

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7471B	0.092	U	0.092	0.0066	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/4/10

4

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-006**
Description: **IR86-SB100-06-07-09D**	Matrix: **Solid**
Date Sampled: **10/08/2009 1135**	% Solids: **82.1** **10/09/2009 2140**
Date Received: **10/09/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1528	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Mercury	**7439-97-6**	**7471B**	~~0.018~~ 0.10	~~B~~ U	**0.10**	**0.0072**	**mg/kg**	**1**	MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

5

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1707	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.011~~ 0.093	~~B~~ U	**0.093**	**0.0066**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
11/19/10

6

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/13/2009 1458	BNW	10/12/2009 1700	19422

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	~~0.000064~~ 0.000104	~~B~~ J	0.00010	0.000053	mg/L	1

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

7

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1719	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7471B	~~0.027~~ 0.10	~~BJ~~ U	0.10	0.0071	mg/kg	1

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

8

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1936	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.024~~ 0.098	~~BJ~~ U	**0.098**	**0.0069**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

hw
11/14/10

9

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1725	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.020~~ 0.098	~~Bd~~ U	**0.098**	**0.0070**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/4/10

10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1727	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7471B	~~0.015~~ 0.11	~~BJ~~ U	0.11	0.0076	mg/kg	1

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/19/10

11

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/13/2009 1500	BNW	10/12/2009 1700	19422

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7470A**	~~0.00014~~ 0.00014	B U	0.00010	0.000053	mg/L	1

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

11/14/10

12

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1730	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.018~~ 0.114	~~BJ~~	**0.11**	**0.0079**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
11/19/10

13

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1739	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.010~~ 0.099 u	~~BJ~~	**0.099**	**0.0071**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

14

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1742	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.011~~ 0.094	~~BJ~~ U	**0.094**	**0.0067**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

15

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1745	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.012**~~ 0.090 U	~~**BJ**~~	**0.090**	**0.0064**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

16

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1747	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.013**~~ 0.090 u	~~**BJ**~~	**0.090**	**0.0064**	**mg/kg**	**1** MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
1/14/10

17

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1750	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.031**~~ 0.096	~~**BJ**~~ U	**0.096**	**0.0069**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
11/4/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ07039

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 14, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB109-07-08-09D	KJ07039-001	Soil
2	IR86-EB01-100609-SB	KJ07039-002	Water
3	IR86-SS100-09D	KJ07039-004	Soil
4	IR86-SB100-06-07-09D	KJ07039-006	Soil
5	IR86-SS109-09D	KJ07039-007	Soil
6	IR86-EB01-100809	KJ07039-009	Water
6MS	IR86-EB01-100809MS	KJ07039-009MS	Water
6MSD	IR86-EB01-100809MSD	KJ07039-009MSD	Water
7	IR86-SB101-06-07-09D	KJ07039-010	Soil
8	IR86-SS104-0-0.5-09D	KJ07039-011	Soil
9	IR86-SB105-05-06-09D	KJ07039-012	Soil
10	IR86-SB104-08-09-09D	KJ07039-013	Soil
11	IR86-EB01-100909-SB	KJ07039-014	Water
12	IR86-SS101-0-0.5-09D	KJ07039-015	Soil
13	IR86-SB102-07-08-09D	KJ07039-016	Soil
14	IR86-SS102-0-0.5-09D	KJ07039-017	Soil
14MS	IR86-SS102-0-0.5-09DMS	KJ07039-017MS	Soil
14MSD	IR86-SS102-0-0.5-09DMSD	KJ07039-017MSD	Soil
15	IR86-SS103-0-0.5-09D	KJ07039-018	Soil
16	IR86-SS103D-0-0.5-09D	KJ07039-019	Soil
17	IR86-SB103-08-09-09D	KJ07039-020	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
14	Benzo(a)anthracene	12%/Ok/Ok	J/UJ
	Benzo(a)pyrene	-90%/-60%/Ok	J/R
	Benzo(b)fluoranthene	-179%/-130%/Ok	
	Benzo(g,h,i)perylene	-129%/-101%/Ok	
	Benzo(k)fluoranthene	-51%/-33%/Ok	
	Chrysene	-38%/-6.9%/Ok	
	Indeno(1,2,3-c,d)pyrene	-80%/-60%/Ok	
	Pyrene	17%/Ok/30	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-100609-SB	None - ND	-	-	-	-
IR86-EB01-100809	None - ND	-	-	-	-
IR86-EB01-100909-SB	None - ND	-	-	-	-
IR86-FB-100909	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS103-0-0.5-09D ug/kg	IR86-SS103D-0-0.5-09D ug/kg	RPD	Qualifier
Benzo(a)anthracene	11	3.9	95%	None

Compound	IR86-SS103-0-0.5-09D ug/kg	IR86-SS103D-0-0.5-09D ug/kg	RPD	Qualifier
Benzo(a)Pyrene	16	4.8	108%	J
Benzo(b)fluoranthene	21	6.3	108%	J
Benzo(g,h,i)perylene	20	5.1	119%	J
Benzo(k)fluoranthene	8.2	2.5	107%	J
Chrysene	12	4.3	94%	None
Fluoranthene	15	5.3	96%	None
Indeno(1,2,3-c,d)pyrene	13	3.9	108%	J
Pyrene	13	5.0	89%	None

Compound Quantitation - Several samples were analyzed at a dilution due to high concentrations of target compounds. See Form Is for which to report.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1138	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.2	U	4.2	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.2	U	4.2	0.65	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.2	U	4.2	0.75	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.2	U	4.2	0.84	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.2	U	4.2	0.64	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.2	U	4.2	0.83	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.2	U	4.2	0.61	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.2	U	4.2	0.57	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.2	U	4.2	0.65	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.2	U	4.2	0.54	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.2	U	4.2	0.73	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.2	U	4.2	1.3	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.2	U	4.2	0.92	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.2	U	4.2	0.64	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		21	20-150
Fluoranthene-d10		30	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

2

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/16/2009 1930	DC	10/13/2009 2015	19510

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		73	20-150
Fluoranthene-d10		64	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

3

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1208	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.7	U	3.7	0.92	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.7	U	3.7	0.57	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.7	U	3.7	0.66	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.7	U	3.7	0.74	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.7	U	3.7	0.56	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.7	U	3.7	0.72	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.7	U	3.7	0.53	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.7	U	3.7	0.50	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.7	U	3.7	0.57	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.7	U	3.7	0.47	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.7	U	3.7	0.64	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.7	U	3.7	0.80	ug/kg	1
Pyrene	**129-00-0**	**8270D (SIM)**	**1.7**	**J**	**3.7**	**0.56**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		39	20-150
Fluoranthene-d10		49	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Nw
11/14/10

4

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1237	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.0	U	4.0	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.0	U	4.0	0.62	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.0	U	4.0	0.72	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.0	U	4.0	0.80	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.0	U	4.0	0.79	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.0	U	4.0	0.58	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.0	U	4.0	0.55	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.0	U	4.0	0.62	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**2.1**	**J**	**4.0**	**0.51**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.0	U	4.0	0.69	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.0	U	4.0	0.87	ug/kg	1
Pyrene	**129-00-0**	**8270D (SIM)**	**1.8**	**J**	**4.0**	**0.61**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		28	20-150
Fluoranthene-d10		56	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

5

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-007**
Description: **IR86-SS109-09D**	Matrix: **Solid**
Date Sampled: **10/08/2009 1145**	% Solids: **88.8** **10/09/2009 2140**
Date Received: **10/09/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1310	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.7	U	3.7	0.93	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**0.95**	**J**	**3.7**	**0.57**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**10**		**3.7**	**0.66**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**10**		**3.7**	**0.74**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**17**		**3.7**	**0.56**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**9.2**		**3.7**	**0.73**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**6.6**		**3.7**	**0.54**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**16**		**3.7**	**0.51**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.7	U	3.7	0.57	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**31**		**3.7**	**0.47**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	3.7	U	3.7	0.64	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**7.7**		**3.7**	**1.1**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**4.3**		**3.7**	**0.81**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**25**		**3.7**	**0.56**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		29	20-150
Fluoranthene-d10		35	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

6

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/16/2009 2004	DC	10/13/2009 2015	19510

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		64	20-150
Fluoranthene-d10		70	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/14/10

7

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1344	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.0	U	4.0	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.0	U	4.0	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.0	U	4.0	0.71	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.0	U	4.0	0.79	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.0	U	4.0	0.78	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.0	U	4.0	0.58	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.0	U	4.0	0.54	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.0	U	4.0	0.50	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.0	U	4.0	0.68	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.0	U	4.0	0.86	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		31	20-150
Fluoranthene-d10		41	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

8

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1417	DC	10/14/2009 1147	19556
2	3550C	8270D (SIM)	10	10/19/2009 1021	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	**83-32-9**	**8270D (SIM)**	**79**		**3.9**	**0.97**	**ug/kg**	**1**
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**2.2**	**J**	**3.9**	**1.1**	**ug/kg**	**1**
Anthracene	**120-12-7**	**8270D (SIM)**	**140**		**3.9**	**0.60**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**260**		**39**	**6.9**	**ug/kg**	**2**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**220**		**39**	**7.7**	**ug/kg**	**2**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**290**		**39**	**5.8**	**ug/kg**	**2**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**190**		**3.9**	**0.76**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**140**		**3.9**	**0.56**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**250**		**39**	**5.3**	**ug/kg**	**2**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**540**		**39**	**4.9**	**ug/kg**	**2**
Fluorene	**86-73-7**	**8270D (SIM)**	**60**		**3.9**	**0.67**	**ug/kg**	**1**
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**170**		**3.9**	**1.2**	**ug/kg**	**1**
Naphthalene	**91-20-3**	**8270D (SIM)**	**12**		**3.9**	**1.1**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**360**		**39**	**8.4**	**ug/kg**	**2**
Pyrene	**129-00-0**	**8270D (SIM)**	**430**		**39**	**5.8**	**ug/kg**	**2**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		53	20-150		41	20-150
Fluoranthene-d10		63	20-150		51	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

9

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/19/2009 1050	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.98	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.9	U	3.9	0.69	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.9	U	3.9	0.78	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.76	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.9	U	3.9	0.56	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.9	U	3.9	0.53	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.9	U	3.9	0.49	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.67	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9	U	3.9	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.9	U	3.9	0.85	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		34	20-150
Fluoranthene-d10		47	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1519	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.2	U	4.2	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.2	U	4.2	0.65	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.2	U	4.2	0.76	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.2	U	4.2	0.85	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.2	U	4.2	0.64	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.2	U	4.2	0.83	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.2	U	4.2	0.62	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.2	U	4.2	0.58	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.2	U	4.2	0.65	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.2	U	4.2	0.54	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.2	U	4.2	0.73	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.2	U	4.2	1.3	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.2	U	4.2	0.92	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.2	U	4.2	0.64	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		43	20-150
Fluoranthene-d10		47	20-150

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/16/2009 2132	DC	10/13/2009 2015	19510

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.053	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		74	20-150
Fluoranthene-d10		65	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
1/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1549	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.4	U	4.4	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**2.5**	**J**	**4.4**	**0.68**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**42**		**4.4**	**0.79**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**57**		**4.4**	**0.88**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**89**		**4.4**	**0.67**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**50**		**4.4**	**0.87**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**32**		**4.4**	**0.64**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**61**		**4.4**	**0.60**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.4	U	4.4	0.68	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**91**		**4.4**	**0.56**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.4	U	4.4	0.76	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**45**		**4.4**	**1.3**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**13**		**4.4**	**0.96**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**68**		**4.4**	**0.67**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		49	20-150
Fluoranthene-d10		55	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

WW
1/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1618	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.98	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.9	U	3.9	0.70	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.9	U	3.9	0.78	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.77	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.9	U	3.9	0.57	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.9	U	3.9	0.53	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.9	U	3.9	0.50	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.67	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9	U	3.9	1.2	ug/kg	1
Naphthalene	**91-20-3**	**8270D (SIM)**	**2.9**	**J**	**3.9**	**1.1**	**ug/kg**	**1**
Phenanthrene	85-01-8	8270D (SIM)	3.9	U	3.9	0.85	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		42	20-150
Fluoranthene-d10		57	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
1/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1647	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	3.7	U	3.7	0.93	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1	
Anthracene	**120-12-7**	**8270D (SIM)**	**3.8**		**3.7**	**0.57**	**ug/kg**	**1**	
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**45**	J	**3.7**	**0.66**	**ug/kg**	**1**	MSL
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**58**	J	**3.7**	**0.74**	**ug/kg**	**1**	
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**87**	J	**3.7**	**0.56**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**60**	J	**3.7**	**0.73**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**34**	J	**3.7**	**0.54**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**57**	J	**3.7**	**0.50**	**ug/kg**	**1**	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.7	U	3.7	0.57	ug/kg	1	
Fluoranthene	**206-44-0**	**8270D (SIM)**	**69**		**3.7**	**0.47**	**ug/kg**	**1**	
Fluorene	86-73-7	8270D (SIM)	3.7	U	3.7	0.64	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**47**	J	**3.7**	**1.1**	**ug/kg**	**1**	MSL
Naphthalene	91-20-3	8270D (SIM)	3.7	U	3.7	1.1	ug/kg	1	
Phenanthrene	**85-01-8**	**8270D (SIM)**	**11**		**3.7**	**0.80**	**ug/kg**	**1**	
Pyrene	**129-00-0**	**8270D (SIM)**	**71**	J	**3.7**	**0.56**	**ug/kg**	**1**	MSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		57	20-150
Fluoranthene-d10		65	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

15

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1819	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	3.5	U	3.5	0.89	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	3.5	U	3.5	1.0	ug/kg	1	
Anthracene	120-12-7	8270D (SIM)	3.5	U	3.5	0.55	ug/kg	1	
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**11**		**3.5**	**0.63**	**ug/kg**	**1**	
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**16**	J	**3.5**	**0.71**	**ug/kg**	**1**	FD
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**21**	J	**3.5**	**0.54**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**20**	J	**3.5**	**0.70**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**8.2**	J	**3.5**	**0.52**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**12**		**3.5**	**0.48**	**ug/kg**	**1**	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.5	U	3.5	0.55	ug/kg	1	
Fluoranthene	**206-44-0**	**8270D (SIM)**	**15**		**3.5**	**0.45**	**ug/kg**	**1**	
Fluorene	86-73-7	8270D (SIM)	3.5	U	3.5	0.61	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**13**	J	**3.5**	**1.1**	**ug/kg**	**1**	FD
Naphthalene	91-20-3	8270D (SIM)	3.5	U	3.5	1.0	ug/kg	1	
Phenanthrene	85-01-8	8270D (SIM)	3.5	U	3.5	0.77	ug/kg	1	
Pyrene	**129-00-0**	**8270D (SIM)**	**13**		**3.5**	**0.54**	**ug/kg**	**1**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		44	20-150
Fluoranthene-d10		52	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

Semivolatile Organic Compounds by GC/MS (SIM)

16

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/17/2009 1849	DC	10/14/2009 1147	19556

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	3.6	U	3.6	0.90	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	3.6	U	3.6	1.0	ug/kg	1	
Anthracene	120-12-7	8270D (SIM)	3.6	U	3.6	0.55	ug/kg	1	
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**3.9**		**3.6**	**0.64**	**ug/kg**	**1**	
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**4.8**	J	**3.6**	**0.72**	**ug/kg**	**1**	FD
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**6.3**		**3.6**	**0.54**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**5.1**		**3.6**	**0.70**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**2.5**		**3.6**	**0.52**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**4.3**		**3.6**	**0.49**	**ug/kg**	**1**	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.6	U	3.6	0.55	ug/kg	1	
Fluoranthene	**206-44-0**	**8270D (SIM)**	**5.3**		**3.6**	**0.46**	**ug/kg**	**1**	
Fluorene	86-73-7	8270D (SIM)	3.6	U	3.6	0.62	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**3.9**	J	**3.6**	**1.1**	**ug/kg**	**1**	FD
Naphthalene	91-20-3	8270D (SIM)	3.6	U	3.6	1.1	ug/kg	1	
Phenanthrene	85-01-8	8270D (SIM)	3.6	U	3.6	0.78	ug/kg	1	
Pyrene	**129-00-0**	**8270D (SIM)**	**5.0**		**3.6**	**0.54**	**ug/kg**	**1**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		37	20-150
Fluoranthene-d10		50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

KW
11/19/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D (SIM)	1	10/23/2009 1103	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.8	U	3.8	0.96	ug/kg	2
Acenaphthylene	208-96-8	8270D (SIM)	3.8	U	3.8	1.1	ug/kg	2
Anthracene	120-12-7	8270D (SIM)	3.8	U	3.8	0.59	ug/kg	2
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.8	U	3.8	0.68	ug/kg	2
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.8	U	3.8	0.76	ug/kg	2
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.8	U	3.8	0.58	ug/kg	2
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.8	U	3.8	0.75	ug/kg	2
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.8	U	3.8	0.56	ug/kg	2
Chrysene	218-01-9	8270D (SIM)	3.8	U	3.8	0.52	ug/kg	2
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.8	U	3.8	0.59	ug/kg	2
Fluoranthene	206-44-0	8270D (SIM)	3.8	U	3.8	0.49	ug/kg	2
Fluorene	86-73-7	8270D (SIM)	3.8	U	3.8	0.66	ug/kg	2
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.8	U	3.8	1.2	ug/kg	2
Naphthalene	91-20-3	8270D (SIM)	3.8	U	3.8	1.1	ug/kg	2
Phenanthrene	85-01-8	8270D (SIM)	3.8	U	3.8	0.83	ug/kg	2
Pyrene	129-00-0	8270D (SIM)	3.8	U	3.8	0.58	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		85	20-150
Fluoranthene-d10		120	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ07039

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 14, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB109-07-08-09D	KJ07039-001	Soil
2	IR86-EB01-100609-SB	KJ07039-002	Water
2MS*	IR86-EB01-100609-SBMS	KJ07039-002MS	Water
2MSD*	IR86-EB01-100609-SBMSD	KJ07039-002MSD	Water
3	IR86-SS100-09D	KJ07039-004	Soil
3MS**	IR86-SS100-09DMS	KJ07039-004MS	Soil
3MSD**	IR86-SS100-09DMSD	KJ07039-004MSD	Soil
4	IR86-SB100-06-07-09D	KJ07039-006	Soil
5	IR86-SS109-09D	KJ07039-007	Soil
6	IR86-EB01-100809	KJ07039-009	Water
7	IR86-SB101-06-07-09D	KJ07039-010	Soil
8	IR86-SS104-0-0.5-09D	KJ07039-011	Soil
9	IR86-SB105-05-06-09D	KJ07039-012	Soil
10	IR86-SB104-08-09-09D	KJ07039-013	Soil
11	IR86-EB01-100909-SB	KJ07039-014	Water
11MS**	IR86-EB01-100909-SBMS	KJ07039-014MS	Water
11MSD**	IR86-EB01-100909-SBMSD	KJ07039-014MSD	Water
12	IR86-SS101-0-0.5-09D	KJ07039-015	Soil
13	IR86-SB102-07-08-09D	KJ07039-016	Soil
14	IR86-SS102-0-0.5-09D	KJ07039-017	Soil
15	IR86-SS103-0-0.5-09D	KJ07039-018	Soil
16	IR86-SS103D-0-0.5-09D	KJ07039-019	Soil
17	IR86-SB103-08-09-09D	KJ07039-020	Soil

** MS/MSD - Pesticide only* *** MS/MSD - PCB only*

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
2 Pest	DCB/TCX	27%/OK	J/UJ
2 PCB	DCB/TCX	33%/Ok	J/UJ
4 Pest	DCB/TCX	Ok/64%	J/UJ

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-100609-SB	None - ND	-	-	-	-
IR86-EB01-100809	None - ND	-	-	-	-
IR86-EB01-100909-SB	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS103-0-0.5-09D ug/kg	IR86-SS103D-0-0.5-09D ug/kg	RPD	Qualifier
gamma-Chlordane	1.0	0.65	42%	None
4,4'-DDD	0.73	0.55	28%	None
4,4'-DDE	0.66	1.2	58%	None
Dieldrin	1.3	1.7	27%	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All results reported with a (P) qualifier by the laboratory were further qualified as estimated (J) except those already qualified.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1515	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.2	U	2.2	0.43	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.2	U	2.2	0.46	ug/kg	2
alpha-BHC	319-84-6	8081B	2.2	U	2.2	0.49	ug/kg	2
beta-BHC	319-85-7	8081B	2.2	U	2.2	0.38	ug/kg	2
delta-BHC	319-86-8	8081B	2.2	U	2.2	0.41	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.2	U	2.2	0.37	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.2	U	2.2	0.30	ug/kg	2
4,4'-DDD	**72-54-8**	**8081B**	**1.3**	**J**	**4.2**	**0.32**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**2.7**	**J**	**4.2**	**0.41**	**ug/kg**	**2**
4,4'-DDT	**50-29-3**	**8081B**	**1.5**	J ~~JP~~	**4.2**	**0.36**	**ug/kg**	**2** 2C
Dieldrin	60-57-1	8081B	4.2	U	4.2	0.42	ug/kg	2
Endosulfan I	959-98-8	8081B	2.2	U	2.2	0.43	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.2	U	4.2	0.32	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.2	U	4.2	0.29	ug/kg	2
Endrin	72-20-8	8081B	4.2	U	4.2	0.42	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.2	U	4.2	0.38	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.2	U	4.2	0.28	ug/kg	2
Heptachlor	76-44-8	8081B	2.2	U	2.2	0.49	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.2	U	2.2	0.39	ug/kg	2
Methoxychlor	72-43-5	8081B	22	U	22	1.7	ug/kg	2
Toxaphene	8001-35-2	8081B	38	U	38	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		91	55-130
Tetrachloro-m-xylene		78	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

2

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/14/2009 2136	ASB	10/13/2009 1812	19511

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UJ U	0.026	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	27	30-135
Tetrachloro-m-xylene		80	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

3

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1530	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.37	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.40	ug/kg	2
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.43	ug/kg	2
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.33	ug/kg	2
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.35	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.32	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	1.9	U	1.9	0.26	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.6	U	3.6	0.27	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.6	U	3.6	0.35	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.6	U	3.6	0.31	ug/kg	2
Dieldrin	60-57-1	8081B	3.6	U	3.6	0.36	ug/kg	2
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.37	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.6	U	3.6	0.27	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.6	U	3.6	0.25	ug/kg	2
Endrin	72-20-8	8081B	3.6	U	3.6	0.36	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.6	U	3.6	0.33	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.6	U	3.6	0.24	ug/kg	2
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.43	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.34	ug/kg	2
Methoxychlor	72-43-5	8081B	19	U	19	1.5	ug/kg	2
Toxaphene	8001-35-2	8081B	33	U	33	10	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		89	55-130
Tetrachloro-m-xylene		74	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

4

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 1844	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0 UJ	U	2.0	0.40	ug/kg	2 SSL
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.43	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.46	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.36	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.35	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.29	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.30	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.9	U	3.9	0.38	ug/kg	2
4,4'-DDT	**50-29-3**	**8081B**	**1.5 J**	**JP**	**3.9**	**0.33**	**ug/kg**	**2**
Dieldrin	60-57-1	8081B	3.9 UJ	U	3.9	0.39	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**0.83 J**	**J**	**3.9**	**0.30**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	3.9 UJ	U	3.9	0.27	ug/kg	2
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.36	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.46	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		101	55-130
Tetrachloro-m-xylene	N	64	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

5

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-007**
Description: **IR86-SS109-09D**	Matrix: **Solid**
Date Sampled: **10/08/2009 1145**	% Solids: **88.8** **10/09/2009 2140**
Date Received: **10/09/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1546	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.38	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.40	ug/kg	2
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.44	ug/kg	2
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.34	ug/kg	2
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.36	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.32	ug/kg	2
gamma-Chlordane	**5103-74-2**	**8081B**	**7.0**	J ~~P~~	**1.9**	**0.27**	**ug/kg**	**2** 2C
4,4'-DDD	**72-54-8**	**8081B**	**6.4**		**3.7**	**0.28**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**5.2**		**3.7**	**0.36**	**ug/kg**	**2**
4,4'-DDT	**50-29-3**	**8081B**	**1.5**	J ~~JP~~	**3.7**	**0.31**	**ug/kg**	**2** 2C
Dieldrin	**60-57-1**	**8081B**	**0.57**	**J**	**3.7**	**0.37**	**ug/kg**	**2**
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.38	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.7	U	3.7	0.28	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.7	U	3.7	0.26	ug/kg	2
Endrin	72-20-8	8081B	3.7	U	3.7	0.37	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.7	U	3.7	0.34	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.7	U	3.7	0.25	ug/kg	2
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.44	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.35	ug/kg	2
Methoxychlor	72-43-5	8081B	19	U	19	1.5	ug/kg	2
Toxaphene	8001-35-2	8081B	34	U	34	10	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		90	55-130
Tetrachloro-m-xylene		80	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

6

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/14/2009 2223	ASB	10/13/2009 1812	19511

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		46	30-135
Tetrachloro-m-xylene		96	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

lw
1/14/10

7

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 1900	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.40	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.43	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.46	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.30	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.9	U	3.9	0.38	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.9	U	3.9	0.33	ug/kg	2
Dieldrin	60-57-1	8081B	3.9	U	3.9	0.39	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.9	U	3.9	0.30	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.9	U	3.9	0.27	ug/kg	2
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.35	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.46	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		105	55-130
Tetrachloro-m-xylene		85	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	3550C	8081B	1	10/23/2009 1602	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.40	ug/kg	3
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	3
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.45	ug/kg	3
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	3
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.37	ug/kg	3
alpha-Chlordane	**5103-71-9**	**8081B**	**4.6**		**2.0**	**0.34**	**ug/kg**	**3**
gamma-Chlordane	**5103-74-2**	**8081B**	**5.9**		**2.0**	**0.28**	**ug/kg**	**3**
4,4'-DDD	**72-54-8**	**8081B**	**1.3**	**J**	**3.8**	**0.29**	**ug/kg**	**3**
4,4'-DDE	**72-55-9**	**8081B**	**2.1**	**J**	**3.8**	**0.37**	**ug/kg**	**3**
4,4'-DDT	**50-29-3**	**8081B**	**6.9**	**J ~~P~~**	**3.8**	**0.33**	**ug/kg**	**3** 2C
Dieldrin	**60-57-1**	**8081B**	**5.7**	**J ~~P~~**	**3.8**	**0.38**	**ug/kg**	**3** 2C
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	3
Endosulfan II	**33213-65-9**	**8081B**	**2.4**	**J ~~JP~~**	**3.8**	**0.29**	**ug/kg**	**3** 2C
Endosulfan sulfate	1031-07-8	8081B	3.8	U	3.8	0.27	ug/kg	3
Endrin	72-20-8	8081B	3.8	U	3.8	0.38	ug/kg	3
Endrin aldehyde	7421-93-4	8081B	3.8	U	3.8	0.35	ug/kg	3
Endrin ketone	53494-70-5	8081B	3.8	U	3.8	0.26	ug/kg	3
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.45	ug/kg	3
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	3
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	3
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	3

Surrogate	Q	Run 3 % Recovery	Acceptance Limits
Decachlorobiphenyl		89	55-130
Tetrachloro-m-xylene		83	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 1916	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.39	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.45	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.37	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.8	U	3.8	0.29	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.8	U	3.8	0.37	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.8	U	3.8	0.32	ug/kg	2
Dieldrin	60-57-1	8081B	3.8	U	3.8	0.38	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.39	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**0.41**	**J**	**3.8**	**0.29**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	3.8	U	3.8	0.27	ug/kg	2
Endrin	72-20-8	8081B	3.8	U	3.8	0.38	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.8	U	3.8	0.35	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.8	U	3.8	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.45	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		103	55-130
Tetrachloro-m-xylene		81	70-125

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
11/4/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 1931	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.43	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.46	ug/kg	2
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.49	ug/kg	2
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.38	ug/kg	2
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.40	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.1	U	2.1	0.37	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.1	U	2.1	0.30	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.2	U	4.2	0.32	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.2	U	4.2	0.40	ug/kg	2
4,4'-DDT	50-29-3	8081B	4.2	U	4.2	0.35	ug/kg	2
Dieldrin	60-57-1	8081B	4.2	U	4.2	0.42	ug/kg	2
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.43	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.2	U	4.2	0.32	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.2	U	4.2	0.29	ug/kg	2
Endrin	72-20-8	8081B	4.2	U	4.2	0.42	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.2	U	4.2	0.38	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.2	U	4.2	0.28	ug/kg	2
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.49	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.39	ug/kg	2
Methoxychlor	72-43-5	8081B	21	U	21	1.7	ug/kg	2
Toxaphene	8001-35-2	8081B	38	U	38	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		105	55-130
Tetrachloro-m-xylene		85	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/14/2009 2310	ASB	10/13/2009 1812	19511

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0050	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0080	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0060	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0050	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		45	30-135
Tetrachloro-m-xylene		95	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

12

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1633	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.2	U	2.2	0.45	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.2	U	2.2	0.48	ug/kg	2
alpha-BHC	319-84-6	8081B	2.2	U	2.2	0.52	ug/kg	2
beta-BHC	319-85-7	8081B	2.2	U	2.2	0.40	ug/kg	2
delta-BHC	319-86-8	8081B	2.2	U	2.2	0.42	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.2	U	2.2	0.38	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.2	U	2.2	0.32	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.4	U	4.4	0.33	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.4	U	4.4	0.42	ug/kg	2
4,4'-DDT	50-29-3	8081B	4.4	U	4.4	0.37	ug/kg	2
Dieldrin	60-57-1	8081B	4.4	U	4.4	0.44	ug/kg	2
Endosulfan I	959-98-8	8081B	2.2	U	2.2	0.45	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.4	U	4.4	0.33	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.4	U	4.4	0.30	ug/kg	2
Endrin	72-20-8	8081B	4.4	U	4.4	0.44	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.4	U	4.4	0.40	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.4	U	4.4	0.29	ug/kg	2
Heptachlor	76-44-8	8081B	2.2	U	2.2	0.52	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.2	U	2.2	0.41	ug/kg	2
Methoxychlor	72-43-5	8081B	22	U	22	1.8	ug/kg	2
Toxaphene	8001-35-2	8081B	40	U	40	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		88	55-130
Tetrachloro-m-xylene		80	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 1947	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.40	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.46	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.29	ug/kg	2
4,4'-DDE	**72-55-9**	**8081B**	**1.0**	**J**	**3.9**	**0.38**	**ug/kg**	**2**
4,4'-DDT	50-29-3	8081B	3.9	U	3.9	0.33	ug/kg	2
Dieldrin	60-57-1	8081B	3.9	U	3.9	0.39	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.9	U	3.9	0.29	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.9	U	3.9	0.27	ug/kg	2
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.35	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.46	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		93	55-130
Tetrachloro-m-xylene		71	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1649	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.38	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.40	ug/kg	2
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.44	ug/kg	2
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.33	ug/kg	2
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.36	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.32	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	1.9	U	1.9	0.27	ug/kg	2
4,4'-DDD	**72-54-8**	**8081B**	**1.7**	**J**	**3.7**	**0.28**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**19**		**3.7**	**0.36**	**ug/kg**	**2**
4,4'-DDT	**50-29-3**	**8081B**	**3.5**	J ~~JP~~	**3.7**	**0.31**	**ug/kg**	**2** 2C
Dieldrin	**60-57-1**	**8081B**	**0.88**	**J**	**3.7**	**0.37**	**ug/kg**	**2**
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.38	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**2.7**	**J**	**3.7**	**0.28**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	3.7	U	3.7	0.26	ug/kg	2
Endrin	72-20-8	8081B	3.7	U	3.7	0.37	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.7	U	3.7	0.33	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.7	U	3.7	0.25	ug/kg	2
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.44	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.35	ug/kg	2
Methoxychlor	72-43-5	8081B	19	U	19	1.5	ug/kg	2
Toxaphene	8001-35-2	8081B	33	U	33	10	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		89	55-130
Tetrachloro-m-xylene		79	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

15

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1704	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.8	U	1.8	0.36	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.8	U	1.8	0.39	ug/kg	2
alpha-BHC	319-84-6	8081B	1.8	U	1.8	0.42	ug/kg	2
beta-BHC	319-85-7	8081B	1.8	U	1.8	0.32	ug/kg	2
delta-BHC	319-86-8	8081B	1.8	U	1.8	0.34	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.8	U	1.8	0.31	ug/kg	2
gamma-Chlordane	**5103-74-2**	**8081B**	**1.0**	J ~~JP~~	**1.8**	**0.26**	**ug/kg**	**2** 2C
4,4'-DDD	**72-54-8**	**8081B**	**0.73**	**J**	**3.5**	**0.27**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**0.66**	**J**	**3.5**	**0.34**	**ug/kg**	**2**
4,4'-DDT	50-29-3	8081B	3.5	U	3.5	0.30	ug/kg	2
Dieldrin	**60-57-1**	**8081B**	**1.3**	**J**	**3.5**	**0.35**	**ug/kg**	**2**
Endosulfan I	959-98-8	8081B	1.8	U	1.8	0.36	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.5	U	3.5	0.27	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.5	U	3.5	0.25	ug/kg	2
Endrin	72-20-8	8081B	3.5	U	3.5	0.35	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.5	U	3.5	0.32	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.5	U	3.5	0.24	ug/kg	2
Heptachlor	76-44-8	8081B	1.8	U	1.8	0.42	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.8	U	1.8	0.33	ug/kg	2
Methoxychlor	72-43-5	8081B	18	U	18	1.4	ug/kg	2
Toxaphene	8001-35-2	8081B	32	U	32	9.8	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		84	55-130
Tetrachloro-m-xylene		82	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/23/2009 1720	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.8	U	1.8	0.36	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.8	U	1.8	0.38	ug/kg	2
alpha-BHC	319-84-6	8081B	1.8	U	1.8	0.41	ug/kg	2
beta-BHC	319-85-7	8081B	1.8	U	1.8	0.32	ug/kg	2
delta-BHC	319-86-8	8081B	1.8	U	1.8	0.34	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.8	U	1.8	0.31	ug/kg	2
gamma-Chlordane	**5103-74-2**	**8081B**	**0.65**	**J**	**1.8**	**0.25**	**ug/kg**	**2**
4,4'-DDD	**72-54-8**	**8081B**	**0.55**	**J**	**3.5**	**0.26**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**1.2**	**J**	**3.5**	**0.34**	**ug/kg**	**2**
4,4'-DDT	50-29-3	8081B	3.5	U	3.5	0.30	ug/kg	2
Dieldrin	**60-57-1**	**8081B**	**1.7**	**J**	**3.5**	**0.35**	**ug/kg**	**2**
Endosulfan I	959-98-8	8081B	1.8	U	1.8	0.36	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.5	U	3.5	0.26	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.5	U	3.5	0.24	ug/kg	2
Endrin	72-20-8	8081B	3.5	U	3.5	0.35	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.5	U	3.5	0.32	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.5	U	3.5	0.23	ug/kg	2
Heptachlor	76-44-8	8081B	1.8	U	1.8	0.41	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.8	U	1.8	0.33	ug/kg	2
Methoxychlor	72-43-5	8081B	18	U	18	1.4	ug/kg	2
Toxaphene	8001-35-2	8081B	32	U	32	9.6	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		80	55-130
Tetrachloro-m-xylene		78	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 2003	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.38	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.41	ug/kg	2
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.44	ug/kg	2
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.34	ug/kg	2
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.36	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.33	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	1.9	U	1.9	0.27	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.7	U	3.7	0.28	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.7	U	3.7	0.36	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.7	U	3.7	0.32	ug/kg	2
Dieldrin	60-57-1	8081B	3.7	U	3.7	0.37	ug/kg	2
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.38	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.7	U	3.7	0.28	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.7	U	3.7	0.26	ug/kg	2
Endrin	72-20-8	8081B	3.7	U	3.7	0.37	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.7	U	3.7	0.34	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.7	U	3.7	0.25	ug/kg	2
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.44	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.35	ug/kg	2
Methoxychlor	72-43-5	8081B	19	U	19	1.5	ug/kg	2
Toxaphene	8001-35-2	8081B	34	U	34	10	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		98	55-130
Tetrachloro-m-xylene		71	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

lw
1/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1348	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	42	U	42	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	85	U	85	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	42	U	42	4.2	ug/kg	1
Aroclor 1242	53469-21-9	8082A	42	U	42	2.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	42	U	42	4.8	ug/kg	1
Aroclor 1254	11097-69-1	8082A	42	U	42	2.3	ug/kg	1
Aroclor 1260	11096-82-5	8082A	42	U	42	7.2	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		107	60-125
Tetrachloro-m-xylene		76	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/4/10

2

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/15/2009 1923	NCM	10/13/2009 1812	19513

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	UJ U	0.26	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	33	40-135
Tetrachloro-m-xylene		89	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

3

TCL Aroclors

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-004**
Description: **IR86-SS100-09D**	Matrix: **Solid**
Date Sampled: **10/07/2009 1450**	% Solids: **89.7** **10/09/2009 0010**
Date Received: **10/08/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1400	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	37	U	37	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	74	U	74	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	37	U	37	3.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	37	U	37	2.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	37	U	37	4.2	ug/kg	1
Aroclor 1254	11097-69-1	8082A	37	U	37	2.0	ug/kg	1
Aroclor 1260	11096-82-5	8082A	37	U	37	6.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		107	60-125
Tetrachloro-m-xylene		84	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

4

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1439	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	40	U	40	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	81	U	81	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	40	U	40	4.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	40	U	40	2.8	ug/kg	1
Aroclor 1248	12672-29-6	8082A	40	U	40	4.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	40	U	40	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	40	U	40	6.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		109	60-125
Tetrachloro-m-xylene		97	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
1/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1453	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	37	U	37	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	75	U	75	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	37	U	37	3.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	37	U	37	2.6	ug/kg	1
Aroclor 1248	12672-29-6	8082A	37	U	37	4.2	ug/kg	1
Aroclor 1254	11097-69-1	8082A	37	U	37	2.0	ug/kg	1
Aroclor 1260	11096-82-5	8082A	37	U	37	6.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		110	60-125
Tetrachloro-m-xylene		92	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

KEJ
1/14/10

6

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/15/2009 1935	NCM	10/13/2009 1812	19513

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		56	40-135
Tetrachloro-m-xylene		109	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

7

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1506	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	40	U	40	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	81	U	81	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	40	U	40	4.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	40	U	40	2.8	ug/kg	1
Aroclor 1248	12672-29-6	8082A	40	U	40	4.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	40	U	40	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	40	U	40	6.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		105	60-125
Tetrachloro-m-xylene		90	22-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

dew
11/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1519	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	78	U	78	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		104	60-125
Tetrachloro-m-xylene		105	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
1/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1531	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	79	U	79	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		111	60-125
Tetrachloro-m-xylene		101	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
1/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1557	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	42	U	42	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	86	U	86	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	42	U	42	4.2	ug/kg	1
Aroclor 1242	53469-21-9	8082A	42	U	42	2.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	42	U	42	4.9	ug/kg	1
Aroclor 1254	11097-69-1	8082A	42	U	42	2.3	ug/kg	1
Aroclor 1260	11096-82-5	8082A	42	U	42	7.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		110	60-125
Tetrachloro-m-xylene		85	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hew
11/19/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/15/2009 1948	NCM	10/13/2009 1812	19513

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.050	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.60	U	0.60	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.50	U	0.50	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.50	U	0.50	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.060	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		55	40-135
Tetrachloro-m-xylene		109	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1609	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	44	U	44	1.5	ug/kg	1
Aroclor 1221	11104-28-2	8082A	89	U	89	13	ug/kg	1
Aroclor 1232	11141-16-5	8082A	44	U	44	4.4	ug/kg	1
Aroclor 1242	53469-21-9	8082A	44	U	44	3.1	ug/kg	1
Aroclor 1248	12672-29-6	8082A	44	U	44	5.1	ug/kg	1
Aroclor 1254	11097-69-1	8082A	44	U	44	2.4	ug/kg	1
Aroclor 1260	11096-82-5	8082A	44	U	44	7.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		102	60-125
Tetrachloro-m-xylene		98	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

NW
11/19/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1622	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	80	U	80	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		111	60-125
Tetrachloro-m-xylene		84	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

hw
11/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1635	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	37	U	37	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	75	U	75	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	37	U	37	3.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	37	U	37	2.6	ug/kg	1
Aroclor 1248	12672-29-6	8082A	37	U	37	4.3	ug/kg	1
Aroclor 1254	11097-69-1	8082A	37	U	37	2.0	ug/kg	1
Aroclor 1260	11096-82-5	8082A	37	U	37	6.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		103	60-125
Tetrachloro-m-xylene		103	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1647	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	35	U	35	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	72	U	72	10	ug/kg	1
Aroclor 1232	11141-16-5	8082A	35	U	35	3.5	ug/kg	1
Aroclor 1242	53469-21-9	8082A	35	U	35	2.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	35	U	35	4.1	ug/kg	1
Aroclor 1254	11097-69-1	8082A	35	U	35	1.9	ug/kg	1
Aroclor 1260	11096-82-5	8082A	35	U	35	6.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		104	60-125
Tetrachloro-m-xylene		96	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/14/10

TCL Aroclors

16

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1700	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	36	U	36	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	72	U	72	10	ug/kg	1
Aroclor 1232	11141-16-5	8082A	36	U	36	3.6	ug/kg	1
Aroclor 1242	53469-21-9	8082A	36	U	36	2.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	36	U	36	4.1	ug/kg	1
Aroclor 1254	11097-69-1	8082A	36	U	36	1.9	ug/kg	1
Aroclor 1260	11096-82-5	8082A	36	U	36	6.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		110	60-125
Tetrachloro-m-xylene		105	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
11/14/10

17

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1713	NCM	10/12/2009 1935	19397

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	38	U	38	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	77	U	77	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	38	U	38	3.8	ug/kg	1
Aroclor 1242	53469-21-9	8082A	38	U	38	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	38	U	38	4.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	38	U	38	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	38	U	38	6.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		116	60-125
Tetrachloro-m-xylene		104	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
1/14/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ07039

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 14, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB109-07-08-09D	KJ07039-001	Soil
2	IR86-EB01-100609-SB	KJ07039-002	Water
2MS	IR86-EB01-100609-SBMS	KJ07039-002MS	Water
2MSD	IR86-EB01-100609-SBMSD	KJ07039-002MSD	Water
3	IR86-SS100-09D	KJ07039-004	Soil
4	IR86-SB100-06-07-09D	KJ07039-006	Soil
4RE	IR86-SB100-06-07-09DRE	KJ07039-006RE	Soil
5	IR86-SS109-09D	KJ07039-007	Soil
5RE	IR86-SS109-09DRE	KJ07039-007RE	Soil
6	IR86-EB01-100809	KJ07039-009	Water
7	IR86-SB101-06-07-09D	KJ07039-010	Soil
8	IR86-SS104-0-0.5-09D	KJ07039-011	Soil
9	IR86-SB105-05-06-09D	KJ07039-012	Soil
10	IR86-SB104-08-09-09D	KJ07039-013	Soil
10MS	IR86-SB104-08-09-09DMS	KJ07039-013MS	Soil
10MSD	IR86-SB104-08-09-09DMSD	KJ07039-013MSD	Soil
11	IR86-EB01-100909-SB	KJ07039-014	Water
12	IR86-SS101-0-0.5-09D	KJ07039-015	Soil
13	IR86-SB102-07-08-09D	KJ07039-016	Soil
13RE	IR86-SB102-07-08-09DRE	KJ07039-016RE	Soil
14	IR86-SS102-0-0.5-09D	KJ07039-017	Soil
15	IR86-SS103-0-0.5-09D	KJ07039-018	Soil
15RE	IR86-SS103-0-0.5-09DRE	KJ07039-018RE	Soil
16	IR86-SS103D-0-0.5-09D	KJ07039-019	Soil
16RE	IR86-SS103D-0-0.5-09DRE	KJ07039-019RE	Soil
17	IR86-SB103-08-09-09D	KJ07039-020	Soil
17MS	IR86-SB103-08-09-09DMS	KJ07039-020MS	Soil
17MSD	IR86-SB103-08-09-09DMSD	KJ07039-020MSD	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples except the following.

Sample	Date Sampled	Date Extracted	# of Days	Qualifier
2	10/06/09	10/14/09	8	J/UJ

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
10/22/09	Acetophenone	99.51%/0.009 RRF	J/R	1, 3, 5RE, 7, 8, 15RE, 16RE, 17
	4-Chloroaniline	33.82%	J/UJ	
	1,1'-Biphenyl	99.11%/0.015 RRF	J/R	
	Caprolactam	113.62%	J/UJ	
	Benzaldehyde	95.31%		
	Atrazine	110.31%		

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/21/09	4-Chloroaniline	31.37%	J/UJ	6, 11, 13, 15
10/31/09	1,1'-Biphenyl	99.06%/0.013 RRF	J/R	14
	Caprolactam	92.75%/0.008 RRF		
	Benzaldehyde	98.08%	J/UJ	
	Atrazine	101.64%		
	Acetophenone	99.51%/0.009 RRF	J/R	
	4-Chloroaniline	29.88%	J/UJ	

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
4	Nitrobenzene-d5	24%	J/UJ - All compounds
	2-Fluorobiphenyl	25%	
	2-Fluorophenol	27%	
	Phenol-d5	28%	
4RE	2-Fluorobiphenyl	35%	None for one out per fraction
	Phenol-d5	34%	
5	All Surrogates	Low	J/UJ
5RE	Nitrobenzene-d5	27%	J/UJ - Unless already qualified
	2-Fluorobiphenyl	28%	
	2-Fluorophenol	27%	
	Phenol-d5	26%	

Sample ID	Surrogate	%R	Qualifier
13	2-Fluorobiphenyl	37%	None for one out
13RE	2-Fluorobiphenyl	35%	J/UJ - Acid
	2-Fluorophenol	34%	
	Phenol-d5	34%	
15	Nitrobenzene-d5	33%	J/UJ - Base/neutral
	2-Fluorobiphenyl	38%	
	Phenol-d5	36%	
15RE	Nitrobenzene-d5	30%	J/UJ - Unless already qualified
	2-Fluorobiphenyl	33%	
	2-Fluorophenol	32%	
	Phenol-d5	32%	
16	Nitrobenzene-d5	29%	J/UJ
	2-Fluorobiphenyl	33%	
	2-Fluorophenol	33%	
	Phenol-d5	36%	
	2,4,6-Tribromophenol	33%	
16RE	Nitrobenzene-d5	20%	J/UJ - Unless already qualified
	2-Fluorobiphenyl	22%	
	2-Fluorophenol	23%	
	Phenol-d5	22%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
2	Atrazine	Ok/Ok/45	None for RPD alone
	Benzaldehyde	Ok/Ok/23	
	4-Chloroaniline	Ok/Ok/61	
10	1,1'Biphenyl	0.73%/0.95%/25	J/R
	Many out	Low	J/UJ - All compounds
17	Acetophenone	Ok/Ok/56	None for RPD alone
	Benzaldehyde	Ok/Ok/56	
	1,1'-Biphenyl	1.1%/1.8%/49	Already qualified due to CCAL
	Caprolactam	Ok/Ok/29	None for RPD alone
	bis(2-Chloroethoxy)methane	Ok/Ok/57	
	bis(2-Chloroethyl)ether	Ok/Ok/60	
	bis(2-Chloroisopropyl)ether	Ok/Ok/61	
	2-Chloronaphthalene	Ok/Ok/51	
	2-Chlorophenol	Ok/Ok/56	
	2,4-Dichlorophenol	Ok/Ok/53	
	2,4-Dimethylphenol	Ok/Ok/50	
	4,6-Dinitro-2-methylphenol	5.0%/16%/100	J/R
	2,4-Dinitrophenol	Ok/4.5%/Ok	
	Hexachlorobutadiene	28%/Ok/63	J/UJ
	Hexachlorocyclopentadiene	0.52%/3.8%/150	J/R
	Hexachloroethane	14%/Ok/79	J/UJ
	Isophorone	Ok/Ok/53	None for RPD alone
	2-Methylnaphthalene	Ok/Ok/55	
	2-Methylphenol	Ok/Ok/50	
	3 &4-Methylphenol	Ok/Ok/52	

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
17 (cont.)	Nitrobenzene	Ok/Ok/55	None for RPD alone
	2-Nitrophenol	24%/Ok/72	J/UJ
	n-Nitrosodi-n-propylamine	Ok/Ok/54	None for RPD alone
	Phenol	Ok/Ok/51	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19554-002	2,4,5-Trichlorophenol	41%	J/UJ	13, 15
	2,4,6-Trichlorophenol	33%		
	2,4-Dichlorophenol	38%		
	2,4-Dinitrotoluene	44%		
	2,6-Dinitrotoluene	45%		
	2-Chloronaphthalane	36%		
	2-Chlorophenol	34%		
	2-Methylnaphthalene	35%		
	2-Methylphenol	33%		
	2-Nitrophenol	38%		
	3 & 4-Methylphenol	36%		
	4-Bromophenyl phenyl ether	41%		
	4-Chloro-3-methyl phenol	39%		
	4-Chlorophenyl phenyl ether	40%		
	bis(2-Chloroethoxy)methane	34%		
	bis(2-Chloroethyl)ether	31%		
	bis(2-Ethylhexyl)phthalate	43%		
	Butyl benzyl phthalate	43%		
	Di-n-butyl phthalate	43%		
	Di-n-octylphthalate	39%		
	Dibenzofuran	38%		
	Diethylphthalate	43%		
	Dimethylphthalate	41%		
	Hexachlorobenzene	40%		
	Hexachlorobutadiene	33%		
	Hexachloroethane	30%		
	Isophorone	35%		
	n-Nitrosodi-n-propylamine	34%		
	n-Nitrosodiphenylamine	44%		
	Nitrobenzene	36%		
	Phenol	35%		

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/kg	Action Level ug/kg	Qualifier	Affected Samples
KQ19901	bis(2-Ethylhexyl)phthalate	33	330	U	5RE, 15RE, 16RE

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-100609-SB	bis(2-Ethylhexyl)phthalate	0.35	117	U	3
IR86-EB01-100809	bis(2-Ethylhexyl)phthalate	1.8	600	U	5RE
IR86-EB01-100909-SB	None - ND	-	-	-	-
IR86-FB100909	bis(2-Ethylhexyl)phthalate	0.33	110	U	8, 14, 15RE, 16RE

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS103-0-0.5-09D ug/kg	IR86-SS103D-0-0.5-09D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Several samples exhibited surrogates outside of QC limits and were reanalyzed with similar results. See Form Is for which samples to use for reporting.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2121	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	320	R ~~U~~	320	23	ug/kg	2 ICL
Atrazine	1912-24-9	8270D	320	UJ ~~U~~	320	22	ug/kg	2 ICB
Benzaldehyde	100-52-7	8270D	320	UJ ~~U~~	320	22	ug/kg	2 ICB
1,1'-Biphenyl	92-52-4	8270D	8300	R ~~U~~	8300	330	ug/kg	2 ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	320	U	320	13	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	320	U	320	28	ug/kg	2
Caprolactam	105-60-2	8270D	320	UJ ~~U~~	320	22	ug/kg	2 ICB
Carbazole	86-74-8	8270D	320	U	320	18	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	320	U	320	11	ug/kg	2
4-Chloroaniline	106-47-8	8270D	320	UJ ~~U~~	320	8.7	ug/kg	2 ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	320	U	320	13	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	42	U	42	12	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	320	U	320	14	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	320	U	320	14	ug/kg	2
2-Chlorophenol	95-57-8	8270D	320	U	320	12	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	320	U	320	14	ug/kg	2
Dibenzofuran	132-64-9	8270D	320	U	320	13	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	320	U	320	46	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	320	U	320	13	ug/kg	2
Diethylphthalate	84-66-2	8270D	320	U	320	14	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	320	U	320	14	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	320	U	320	15	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	320	U	320	23	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	500	U	500	170	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	420	U	420	140	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	320	U	320	23	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	320	U	320	22	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	320	U	320	41	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	320	U	320	15	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	320	U	320	19	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	320	U	320	14	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	320	U	320	31	ug/kg	2
Hexachloroethane	67-72-1	8270D	320	U	320	11	ug/kg	2
Isophorone	78-59-1	8270D	230	U	230	9.5	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	320	U	320	13	ug/kg	2
2-Methylphenol	95-48-7	8270D	320	U	320	7.7	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	86	U	86	15	ug/kg	2
2-Nitroaniline	88-74-4	8270D	320	U	320	29	ug/kg	2
3-Nitroaniline	99-09-2	8270D	320	U	320	50	ug/kg	2
4-Nitroaniline	100-01-6	8270D	320	U	320	24	ug/kg	2
Nitrobenzene	98-95-3	8270D	320	U	320	6.9	ug/kg	2
2-Nitrophenol	88-75-5	8270D	320	U	320	23	ug/kg	2
4-Nitrophenol	100-02-7	8270D	380	U	380	120	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	320	U	320	17	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2121	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	320	U	320	11	ug/kg	2
Pentachlorophenol	87-86-5	8270D	540	U	540	180	ug/kg	2
Phenol	108-95-2	8270D	320	U	320	12	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	320	U	320	12	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	320	U	320	13	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		47	35-100
2-Fluorobiphenyl		60	45-105
Terphenyl-d14		69	30-125
2-Fluorophenol		50	35-105
Phenol-d5		53	40-100
2,4,6-Tribromophenol		76	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

2

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1233	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	UJ UH	10	0.32	ug/L	1 HT
Atrazine	1912-24-9	8270D	10	UH	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	UH	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	UH	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	UH	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	UH	2.0	0.091	ug/L	1
Caprolactam	105-60-2	8270D	10	UH	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	UH	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	UH	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	UH	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	UH	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	UH	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	UH	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	UH	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	UH	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	UH	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	UH	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	UH	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	UH	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	UH	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	UH	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	UH	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	UH	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	UH	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	UH	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	UH	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	UH	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	UH	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**0.35**	**J JH**	**5.1**	**0.11**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.0	UJ UH	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	UH	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	UH	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	UH	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	UH	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	UH	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	UH	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	UH	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	UH	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	UH	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	UH	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	UH	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	UH	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	UH	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	UH	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

Semivolatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1233	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	UJ ~~UH~~	5.1	0.24	ug/L	1 HT
Pentachlorophenol	87-86-5	8270D	5.1	~~UH~~	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	~~UH~~	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	~~UH~~	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	~~UH~~	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	~~H~~	60	40-110
2-Fluorobiphenyl	~~H~~	60	50-110
Terphenyl-d14	~~H~~	54	50-135
2-Fluorophenol	~~H~~	57	20-110
Phenol-d5	~~H~~	56	10-115
2,4,6-Tribromophenol	~~H~~	63	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2140	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	280 R	~~U~~	280	20	ug/kg	2 ICL
Atrazine	1912-24-9	8270D	280 UJ	U	280	19	ug/kg	2 ICB
Benzaldehyde	100-52-7	8270D	280 UJ	U	280	19	ug/kg	2 ↓
1,1'-Biphenyl	92-52-4	8270D	8300 R	U	8300	330	ug/kg	2 ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	280	U	280	11	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	280	U	280	25	ug/kg	2
Caprolactam	105-60-2	8270D	280 UJ	~~U~~	280	19	ug/kg	2 ICB
Carbazole	86-74-8	8270D	280	U	280	16	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	280	U	280	9.4	ug/kg	2
4-Chloroaniline	106-47-8	8270D	280 UJ	~~U~~	280	7.6	ug/kg	2 ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	280	U	280	11	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	37	U	37	10	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	280	U	280	12	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	280	U	280	12	ug/kg	2
2-Chlorophenol	95-57-8	8270D	280	U	280	10	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	280	U	280	12	ug/kg	2
Dibenzofuran	132-64-9	8270D	280	U	280	11	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	280	U	280	40	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	280	U	280	11	ug/kg	2
Diethylphthalate	84-66-2	8270D	280	U	280	12	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	280	U	280	12	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	280	U	280	13	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	280	U	280	20	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	430	U	430	140	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	370	U	370	120	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	280	U	280	20	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	280	U	280	19	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	280	U	280	36	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	280 ~~13~~	U ~~BJ~~	**280**	**13**	**ug/kg**	**2** EBL
Hexachlorobenzene	118-74-1	8270D	280	U	280	17	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	280	U	280	12	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	280	U	280	27	ug/kg	2
Hexachloroethane	67-72-1	8270D	280	U	280	9.9	ug/kg	2
Isophorone	78-59-1	8270D	200	U	200	8.2	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	280	U	280	11	ug/kg	2
2-Methylphenol	95-48-7	8270D	280	U	280	6.7	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	75	U	75	13	ug/kg	2
2-Nitroaniline	88-74-4	8270D	280	U	280	26	ug/kg	2
3-Nitroaniline	99-09-2	8270D	280	U	280	43	ug/kg	2
4-Nitroaniline	100-01-6	8270D	280	U	280	21	ug/kg	2
Nitrobenzene	98-95-3	8270D	280	U	280	6.0	ug/kg	2
2-Nitrophenol	88-75-5	8270D	280	U	280	20	ug/kg	2
4-Nitrophenol	100-02-7	8270D	330	U	330	110	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	280	U	280	14	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw 1/14/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2140	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	280	U	280	9.6	ug/kg	2
Pentachlorophenol	87-86-5	8270D	470	U	470	160	ug/kg	2
Phenol	108-95-2	8270D	280	U	280	10	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	280	U	280	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	280	U	280	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	35-100
2-Fluorobiphenyl		69	45-105
Terphenyl-d14		72	30-125
2-Fluorophenol		70	35-105
Phenol-d5		69	40-100
2,4,6-Tribromophenol		76	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

4

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1530	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/29/2009 2028	CRM	10/20/2009 1420	19901

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300 UJ	U	300	22	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	300	U	300	21	ug/kg	1
Benzaldehyde	100-52-7	8270D	300	U	300	21	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	8300	U	8300	330	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	27	ug/kg	1
Caprolactam	105-60-2	8270D	300	U	300	21	ug/kg	1
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	300 UJ	U	300	8.3	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	40	U	40	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	44	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	400	U	400	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	21	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	300	U	300	39	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	15	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	1
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	9.0	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	300	U	300	7.3	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	81	U	81	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	300	U	300	28	ug/kg	1
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	1
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	1
Nitrobenzene	98-95-3	8270D	300	U	300	6.6	ug/kg	1
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	360	U	360	120	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/14/10

4

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1530	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/29/2009 2028	CRM	10/20/2009 1420	19901

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	300 UJ	U	300	16	ug/kg	1 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	510	U	510	170	ug/kg	1
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	24	35-100		35	35-100
2-Fluorobiphenyl	N	25	45-105	N	35	45-105
Terphenyl-d14		43	30-125		47	30-125
2-Fluorophenol	N	27	35-105		37	35-105
Phenol-d5	N	28	40-100	N	34	40-100
2,4,6-Tribromophenol		44	35-125		46	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/14/10

4RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1530	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/29/2009 2028	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	22	ug/kg	2
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	2
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	26	ug/kg	2
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	2
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	2
4-Chloroaniline	106-47-8	8270D	300	U	300	8.1	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	2
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	2
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	2
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	300	U	300	38	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	2
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	2
Isophorone	78-59-1	8270D	220	U	220	8.8	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	2
2-Methylphenol	95-48-7	8270D	300	U	300	7.2	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	80	U	80	14	ug/kg	2
2-Nitroaniline	88-74-4	8270D	300	U	300	27	ug/kg	2
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	2
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	2
Nitrobenzene	98-95-3	8270D	300	U	300	6.5	ug/kg	2
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	2
4-Nitrophenol	100-02-7	8270D	360	U	360	110	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nej
1/14/10

4RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1530	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/29/2009 2028	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	2
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	2
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	2
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	24	35-100		35	35-100
2-Fluorobiphenyl	N	25	45-105	N	35	45-105
Terphenyl-d14		43	30-125		47	30-125
2-Fluorophenol	N	27	35-105		37	35-105
Phenol-d5	N	28	40-100	N	34	40-100
2,4,6-Tribromophenol		44	35-125		46	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1549	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/22/2009 2217	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	280	UJ U	280	20	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	280	U	280	19	ug/kg	1
Benzaldehyde	100-52-7	8270D	280	U	280	19	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	280	U	280	11	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	280	U	280	11	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	280	U	280	25	ug/kg	1
Caprolactam	105-60-2	8270D	280	U	280	19	ug/kg	1
Carbazole	86-74-8	8270D	280	U	280	16	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	280	U	280	9.5	ug/kg	1
4-Chloroaniline	106-47-8	8270D	280	UJ U	280	7.7	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	280	U	280	11	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	37	U	37	10	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	280	U	280	12	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	280	U	280	12	ug/kg	1
2-Chlorophenol	95-57-8	8270D	280	U	280	10	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	280	U	280	12	ug/kg	1
Dibenzofuran	132-64-9	8270D	280	U	280	11	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	280	U	280	41	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	280	U	280	11	ug/kg	1
Diethylphthalate	84-66-2	8270D	280	U	280	12	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	280	U	280	12	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	280	U	280	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	280	U	280	20	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	440	U	440	150	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	370	U	370	120	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	280	U	280	20	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	280	U	280	19	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	280	U	280	36	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	280	U	280	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	280	U	280	17	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	280	U	280	12	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	280	U	280	27	ug/kg	1
Hexachloroethane	67-72-1	8270D	280	U	280	10	ug/kg	1
Isophorone	78-59-1	8270D	200	U	200	8.3	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	280	U	280	11	ug/kg	1
2-Methylphenol	95-48-7	8270D	280	U	280	6.8	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	75	U	75	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	280	U	280	26	ug/kg	1
3-Nitroaniline	99-09-2	8270D	280	U	280	44	ug/kg	1
4-Nitroaniline	100-01-6	8270D	280	U	280	21	ug/kg	1
Nitrobenzene	98-95-3	8270D	280	U	280	6.1	ug/kg	1
2-Nitrophenol	88-75-5	8270D	280	U	280	20	ug/kg	1
4-Nitrophenol	100-02-7	8270D	340	U	340	110	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/19/10

5

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1549	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/22/2009 2217	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	280	UJ U	280	15	ug/kg	1 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	280	U	280	9.7	ug/kg	1
Pentachlorophenol	87-86-5	8270D	470	U	470	160	ug/kg	1
Phenol	108-95-2	8270D	280	U	280	10	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	280	U	280	10	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	280	U	280	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	22	35-100	N	27	35-100
2-Fluorobiphenyl	N	27	45-105	N	28	45-105
Terphenyl-d14	N	27	30-125		73	30-125
2-Fluorophenol	N	22	35-105	N	27	35-105
Phenol-d5	N	22	40-100	N	26	40-100
2,4,6-Tribromophenol	N	28	35-125		76	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

5RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1549	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/22/2009 2217	CRM	10/20/2009 1420	19901

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	280 R	~~U~~	280	20	ug/kg	2	ICL
Atrazine	1912-24-9	8270D	280 UJ	U	280	19	ug/kg	2	ICB
Benzaldehyde	100-52-7	8270D	280 UJ	U	280	19	ug/kg	2	ICB
1,1'-Biphenyl	92-52-4	8270D	8200 R	U	8200	330	ug/kg	2	ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	280 UJ	U	280	11	ug/kg	2	SSL
Butyl benzyl phthalate	85-68-7	8270D	280 UJ	U	280	24	ug/kg	2	↓
Caprolactam	105-60-2	8270D	280 UJ	~~U~~	280	19	ug/kg	2	ICB
Carbazole	86-74-8	8270D	280	U	280	16	ug/kg	2	SSL
4-Chloro-3-methyl phenol	59-50-7	8270D	280	U	280	9.3	ug/kg	2	↓
4-Chloroaniline	106-47-8	8270D	280 UJ	~~U~~	280	7.6	ug/kg	2	ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	280	U	280	11	ug/kg	2	SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	37	U	37	10	ug/kg	2	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	280	U	280	12	ug/kg	2	
2-Chloronaphthalene	91-58-7	8270D	280	U	280	12	ug/kg	2	
2-Chlorophenol	95-57-8	8270D	280	U	280	10	ug/kg	2	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	280	U	280	12	ug/kg	2	
Dibenzofuran	132-64-9	8270D	280	U	280	11	ug/kg	2	
3,3'-Dichlorobenzidine	91-94-1	8270D	280	U	280	40	ug/kg	2	
2,4-Dichlorophenol	120-83-2	8270D	280	U	280	11	ug/kg	2	
Diethylphthalate	84-66-2	8270D	280	U	280	12	ug/kg	2	
Dimethyl phthalate	131-11-3	8270D	280	U	280	12	ug/kg	2	
2,4-Dimethylphenol	105-67-9	8270D	280	U	280	13	ug/kg	2	
Di-n-butyl phthalate	84-74-2	8270D	280	U	280	20	ug/kg	2	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	430	U	430	140	ug/kg	2	
2,4-Dinitrophenol	51-28-5	8270D	370	U	370	120	ug/kg	2	
2,4-Dinitrotoluene	121-14-2	8270D	280	U	280	20	ug/kg	2	
2,6-Dinitrotoluene	606-20-2	8270D	280	U	280	19	ug/kg	2	
Di-n-octylphthalate	117-84-0	8270D	280	U	280	36	ug/kg	2	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	280 ~~5~~ UJ	~~B+~~	**280**	**13**	**ug/kg**	**2**	EBL
Hexachlorobenzene	118-74-1	8270D	280 UJ	U	280	17	ug/kg	2	
Hexachlorobutadiene	87-68-3	8270D	280	U	280	12	ug/kg	2	
Hexachlorocyclopentadiene	77-47-4	8270D	280	U	280	27	ug/kg	2	
Hexachloroethane	67-72-1	8270D	280	U	280	9.9	ug/kg	2	
Isophorone	78-59-1	8270D	200	U	200	8.2	ug/kg	2	
2-Methylnaphthalene	91-57-6	8270D	280	U	280	11	ug/kg	2	
2-Methylphenol	95-48-7	8270D	280	U	280	6.7	ug/kg	2	
3 & 4-Methylphenol	106-44-5	8270D	74	U	74	13	ug/kg	2	
2-Nitroaniline	88-74-4	8270D	280	U	280	26	ug/kg	2	
3-Nitroaniline	99-09-2	8270D	280	U	280	43	ug/kg	2	
4-Nitroaniline	100-01-6	8270D	280	U	280	21	ug/kg	2	
Nitrobenzene	98-95-3	8270D	280	U	280	6.0	ug/kg	2	
2-Nitrophenol	88-75-5	8270D	280	U	280	20	ug/kg	2	
4-Nitrophenol	100-02-7	8270D	330	U	330	110	ug/kg	2	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
11/4/10

SRE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-007**
Description: **IR86-SS109-09D**	Matrix: **Solid**
Date Sampled: **10/08/2009 1145**	% Solids: **88.8** **10/09/2009 2140**
Date Received: **10/09/2009**	

use orig. WR

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1549	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/22/2009 2217	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	280 UJ	U	280	14	ug/kg	2 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	280	U	280	9.6	ug/kg	2
Pentachlorophenol	87-86-5	8270D	470	U	470	160	ug/kg	2
Phenol	108-95-2	8270D	280	U	280	10	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	280	U	280	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	280	U	280	11	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	22	35-100	N	27	35-100
2-Fluorobiphenyl	N	27	45-105	N	28	45-105
Terphenyl-d14	N	27	30-125		73	30-125
2-Fluorophenol	N	22	35-105	N	27	35-105
Phenol-d5	N	22	40-100	N	26	40-100
2,4,6-Tribromophenol	N	28	35-125		76	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
11/14/10

6

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1332	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	UJ	5.2	0.23	ug/L	1 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.062	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**1.8**	**J**	**5.2**	**0.11**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

6

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1332	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	40-110
2-Fluorobiphenyl		51	50-110
Terphenyl-d14		65	50-135
2-Fluorophenol		46	20-110
Phenol-d5		46	10-115
2,4,6-Tribromophenol		64	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2236	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	R ~~U~~	300	22	ug/kg	2 JCL
Atrazine	1912-24-9	8270D	300	UJ ~~U~~	300	21	ug/kg	2 JCB
Benzaldehyde	100-52-7	8270D	300	UJ ~~U~~	300	21	ug/kg	2 JCB
1,1'-Biphenyl	92-52-4	8270D	8300	R ~~U~~	8300	330	ug/kg	2 JCL
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	27	ug/kg	2
Caprolactam	105-60-2	8270D	300	UJ ~~U~~	300	21	ug/kg	2 JCB
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	2
4-Chloroaniline	106-47-8	8270D	300	UJ ~~U~~	300	8.2	ug/kg	2 JCB
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	40	U	40	11	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	2
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	2
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	44	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	2
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	15	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	400	U	400	130	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	21	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	300	U	300	39	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	15	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	2
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	2
Isophorone	78-59-1	8270D	220	U	220	8.9	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	2
2-Methylphenol	95-48-7	8270D	300	U	300	7.3	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	81	U	81	15	ug/kg	2
2-Nitroaniline	88-74-4	8270D	300	U	300	28	ug/kg	2
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	2
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	2
Nitrobenzene	98-95-3	8270D	300	U	300	6.5	ug/kg	2
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	2
4-Nitrophenol	100-02-7	8270D	360	U	360	120	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

QW
11/14/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2236	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	2
Pentachlorophenol	87-86-5	8270D	510	U	510	170	ug/kg	2
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		62	35-100
2-Fluorobiphenyl		64	45-105
Terphenyl-d14		74	30-125
2-Fluorophenol		63	35-105
Phenol-d5		62	40-100
2,4,6-Tribromophenol		68	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

8

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2255	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	290	R ~~U~~	290	21	ug/kg	2 ICL
Atrazine	1912-24-9	8270D	290	UJ ~~U~~	290	20	ug/kg	2 ICB
Benzaldehyde	100-52-7	8270D	290	UJ ~~U~~	290	20	ug/kg	2 ICB
1,1'-Biphenyl	92-52-4	8270D	8300	R ~~U~~	8300	330	ug/kg	2 ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	12	ug/kg	2
Butyl benzyl phthalate	**85-68-7**	**8270D**	**99**	**J**	**290**	**26**	**ug/kg**	**2**
Caprolactam	105-60-2	8270D	290	UJ ~~U~~	290	20	ug/kg	2 ICB
Carbazole	**86-74-8**	**8270D**	**29**	**J**	**290**	**16**	**ug/kg**	**2**
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.9	ug/kg	2
4-Chloroaniline	106-47-8	8270D	290	UJ ~~U~~	290	8.0	ug/kg	2 ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	2
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	2
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	42	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	12	ug/kg	2
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	290	U	290	38	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	290 ~~85~~	U ~~BJ~~	**290**	**14**	**ug/kg**	**2** FBL
Hexachlorobenzene	118-74-1	8270D	290	U	290	18	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	2
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	2
Isophorone	78-59-1	8270D	210	U	210	8.7	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	290	U	290	12	ug/kg	2
2-Methylphenol	95-48-7	8270D	290	U	290	7.1	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	79	U	79	14	ug/kg	2
2-Nitroaniline	88-74-4	8270D	290	U	290	27	ug/kg	2
3-Nitroaniline	99-09-2	8270D	290	U	290	46	ug/kg	2
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	2
Nitrobenzene	98-95-3	8270D	290	U	290	6.3	ug/kg	2
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	2
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WJ
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/22/2009 2255	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	10	ug/kg	2
Pentachlorophenol	87-86-5	8270D	490	U	490	160	ug/kg	2
Phenol	108-95-2	8270D	290	U	290	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	35-100
2-Fluorobiphenyl		63	45-105
Terphenyl-d14		69	30-125
2-Fluorophenol		57	35-105
Phenol-d5		60	40-100
2,4,6-Tribromophenol		76	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2109	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	21	ug/kg	2
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	2
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	26	ug/kg	2
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	2
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	9.9	ug/kg	2
4-Chloroaniline	106-47-8	8270D	300	U	300	8.0	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	2
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	2
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	2
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	21	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	21	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	300	U	300	38	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	28	ug/kg	2
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	2
Isophorone	78-59-1	8270D	210	U	210	8.8	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	2
2-Methylphenol	95-48-7	8270D	300	U	300	7.1	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	79	U	79	14	ug/kg	2
2-Nitroaniline	88-74-4	8270D	300	U	300	27	ug/kg	2
3-Nitroaniline	99-09-2	8270D	300	U	300	46	ug/kg	2
4-Nitroaniline	100-01-6	8270D	300	U	300	22	ug/kg	2
Nitrobenzene	98-95-3	8270D	300	U	300	6.4	ug/kg	2
2-Nitrophenol	88-75-5	8270D	300	U	300	21	ug/kg	2
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	15	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

(uw)
11/14/10

9

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2109	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	2
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	2
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		46	35-100
2-Fluorobiphenyl		46	45-105
Terphenyl-d14		53	30-125
2-Fluorophenol		46	35-105
Phenol-d5		43	40-100
2,4,6-Tribromophenol		47	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/19/10

10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2130	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	320 UJ	U	320	23	ug/kg	2 MSL
Atrazine	1912-24-9	8270D	320	U	320	22	ug/kg	2
Benzaldehyde	100-52-7	8270D	320	U	320	22	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	320 R	U	320	13	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	320 UJ	U	320	13	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	320	U	320	28	ug/kg	2
Caprolactam	105-60-2	8270D	320	U	320	22	ug/kg	2
Carbazole	86-74-8	8270D	320	U	320	18	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	320	U	320	11	ug/kg	2
4-Chloroaniline	106-47-8	8270D	320	U	320	8.7	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	320	U	320	13	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	42	U	42	12	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	320	U	320	14	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	320	U	320	14	ug/kg	2
2-Chlorophenol	95-57-8	8270D	320	U	320	12	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	320	U	320	14	ug/kg	2
Dibenzofuran	132-64-9	8270D	320	U	320	13	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	320	U	320	46	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	320	U	320	13	ug/kg	2
Diethylphthalate	84-66-2	8270D	320	U	320	14	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	320	U	320	14	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	320	U	320	15	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	320	U	320	23	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	500	U	500	170	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	420	U	420	140	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	320	U	320	23	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	320	U	320	22	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	320	U	320	41	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	320	U	320	15	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	320	U	320	19	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	320	U	320	14	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	320	U	320	31	ug/kg	2
Hexachloroethane	67-72-1	8270D	320	U	320	11	ug/kg	2
Isophorone	78-59-1	8270D	230	U	230	9.5	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	320	U	320	13	ug/kg	2
2-Methylphenol	95-48-7	8270D	320	U	320	7.7	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	86	U	86	15	ug/kg	2
2-Nitroaniline	88-74-4	8270D	320	U	320	29	ug/kg	2
3-Nitroaniline	99-09-2	8270D	320	U	320	50	ug/kg	2
4-Nitroaniline	100-01-6	8270D	320	U	320	24	ug/kg	2
Nitrobenzene	98-95-3	8270D	320	U	320	6.9	ug/kg	2
2-Nitrophenol	88-75-5	8270D	320	U	320	23	ug/kg	2
4-Nitrophenol	100-02-7	8270D	380	U	380	120	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	320	U	320	17	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
1/14/10

10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2130	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	320	UJ U	320	11	ug/kg	2 MSL
Pentachlorophenol	87-86-5	8270D	540	U	540	180	ug/kg	2
Phenol	108-95-2	8270D	320	U	320	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	320	U	320	12	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	320	U	320	13	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		50	35-100
2-Fluorobiphenyl		49	45-105
Terphenyl-d14		54	30-125
2-Fluorophenol		50	35-105
Phenol-d5		47	40-100
2,4,6-Tribromophenol		56	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/14/10

11

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1352	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.095	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	UJ ~~U~~	5.3	0.23	ug/L	1 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.61	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.61	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.094	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
11/14/10

11

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 1352	DC	10/14/2009 2015	19553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.60	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	40-110
2-Fluorobiphenyl		60	50-110
Terphenyl-d14		61	50-135
2-Fluorophenol		53	20-110
Phenol-d5		55	10-115
2,4,6-Tribromophenol		56	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2150	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	330	U	330	24	ug/kg	2
Atrazine	1912-24-9	8270D	330	U	330	23	ug/kg	2
Benzaldehyde	100-52-7	8270D	330	U	330	23	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	330	U	330	13	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	330	U	330	13	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	330	U	330	29	ug/kg	2
Caprolactam	105-60-2	8270D	330	U	330	23	ug/kg	2
Carbazole	86-74-8	8270D	330	U	330	19	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	330	U	330	11	ug/kg	2
4-Chloroaniline	106-47-8	8270D	330	U	330	9.1	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	330	U	330	13	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	44	U	44	12	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	330	U	330	15	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	330	U	330	15	ug/kg	2
2-Chlorophenol	95-57-8	8270D	330	U	330	12	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	330	U	330	15	ug/kg	2
Dibenzofuran	132-64-9	8270D	330	U	330	13	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	330	U	330	48	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	330	U	330	13	ug/kg	2
Diethylphthalate	84-66-2	8270D	330	U	330	15	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	330	U	330	15	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	330	U	330	16	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	330	U	330	24	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	520	U	520	170	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	440	U	440	150	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	330	U	330	24	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	330	U	330	23	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	330	U	330	43	ug/kg	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	330	U	330	16	ug/kg	2
Hexachlorobenzene	118-74-1	8270D	330	U	330	20	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	330	U	330	15	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	330	U	330	32	ug/kg	2
Hexachloroethane	67-72-1	8270D	330	U	330	12	ug/kg	2
Isophorone	78-59-1	8270D	240	U	240	9.9	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	330	U	330	13	ug/kg	2
2-Methylphenol	95-48-7	8270D	330	U	330	8.0	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	89	U	89	16	ug/kg	2
2-Nitroaniline	88-74-4	8270D	330	U	330	31	ug/kg	2
3-Nitroaniline	99-09-2	8270D	330	U	330	52	ug/kg	2
4-Nitroaniline	100-01-6	8270D	330	U	330	25	ug/kg	2
Nitrobenzene	98-95-3	8270D	330	U	330	7.2	ug/kg	2
2-Nitrophenol	88-75-5	8270D	330	U	330	24	ug/kg	2
4-Nitrophenol	100-02-7	8270D	400	U	400	130	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	330	U	330	17	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/29/2009 2150	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	330	U	330	11	ug/kg	2
Pentachlorophenol	87-86-5	8270D	560	U	560	190	ug/kg	2
Phenol	108-95-2	8270D	330	U	330	12	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	330	U	330	12	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	330	U	330	13	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		52	35-100
2-Fluorobiphenyl		51	45-105
Terphenyl-d14		58	30-125
2-Fluorophenol		50	35-105
Phenol-d5		51	40-100
2,4,6-Tribromophenol		67	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW
11/14/10

13

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1846	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	11/02/2009 0631	CRM	10/20/2009 1420	19901

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	300	U	300	21	ug/kg	1	
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	1	
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	8300	U	8300	830	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	300	UJ ~~U~~	300	12	ug/kg	1	BSL
Butyl benzyl phthalate	85-68-7	8270D	300	UJ ~~U~~	300	26	ug/kg	1	↓
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	1	
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	300	UJ ~~U~~	300	9.9	ug/kg	1	BSL
4-Chloroaniline	106-47-8	8270D	300	UJ ~~U~~	300	8.0	ug/kg	1	CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	UJ ~~U~~	300	12	ug/kg	1	BSL
bis(2-Chloroethyl)ether	111-44-4	8270D	39	UJ ~~U~~	39	11	ug/kg	1	↓
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	300	UJ ~~U~~	300	13	ug/kg	1	BSL
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	UJ ~~U~~	300	13	ug/kg	1	BSL
Dibenzofuran	132-64-9	8270D	300	UJ ~~U~~	300	12	ug/kg	1	BSL
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	300	UJ ~~U~~	300	12	ug/kg	1	BSL
Diethylphthalate	84-66-2	8270D	300	UJ ~~U~~	300	13	ug/kg	1	↓
Dimethyl phthalate	131-11-3	8270D	300	UJ ~~U~~	300	13	ug/kg	1	↓
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	300	UJ ~~U~~	300	21	ug/kg	1	BSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	300	UJ ~~U~~	300	21	ug/kg	1	BSL
2,6-Dinitrotoluene	606-20-2	8270D	300	UJ ~~U~~	300	20	ug/kg	1	↓
Di-n-octylphthalate	117-84-0	8270D	300	UJ ~~U~~	300	38	ug/kg	1	↓
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	UJ ~~U~~	300	14	ug/kg	1	↓
Hexachlorobenzene	118-74-1	8270D	300	UJ ~~U~~	300	18	ug/kg	1	↓
Hexachlorobutadiene	87-68-3	8270D	300	UJ ~~U~~	300	13	ug/kg	1	↓
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	28	ug/kg	1	
Hexachloroethane	67-72-1	8270D	300	UJ ~~U~~	300	11	ug/kg	1	BSL
Isophorone	78-59-1	8270D	210	UJ ~~U~~	210	8.8	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	300	UJ ~~U~~	300	12	ug/kg	1	↓
2-Methylphenol	95-48-7	8270D	300	UJ ~~U~~	300	7.1	ug/kg	1	↓
3 & 4-Methylphenol	106-44-5	8270D	79	UJ ~~U~~	79	14	ug/kg	1	↓
2-Nitroaniline	88-74-4	8270D	300	U	300	27	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	300	U	300	46	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	300	U	300	22	ug/kg	1	
Nitrobenzene	98-95-3	8270D	300	UJ ~~U~~	300	6.4	ug/kg	1	BSL
2-Nitrophenol	88-75-5	8270D	300	UJ ~~U~~	300	21	ug/kg	1	↓
4-Nitrophenol	100-02-7	8270D	360	U	360	110	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
1/14/10

13

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1846	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	11/02/2009 0631	CRM	10/20/2009 1420	19901

Use reanaly SS

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	UJ ~~U~~	300	15	ug/kg	1 BSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	UJ ~~U~~	300	10	ug/kg	1 ↓
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	1
Phenol	108-95-2	8270D	300	UJ ~~U~~	300	11	ug/kg	1 BSL
2,4,5-Trichlorophenol	95-95-4	8270D	300	UJ ~~U~~	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	UJ ~~U~~	300	12	ug/kg	1 ↓

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		37	35-100		37	35-100
2-Fluorobiphenyl	N	37	45-105	N	35	45-105
Terphenyl-d14		42	30-125		68	30-125
2-Fluorophenol		43	35-105	N	34	35-105
Phenol-d5		44	40-100	N	34	40-100
2,4,6-Tribromophenol		56	35-125		60	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
11/4/10

13RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1846	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	11/02/2009 0631	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	290	U	290	21	ug/kg	2	
Atrazine	1912-24-9	8270D	290	U	290	20	ug/kg	2	
Benzaldehyde	100-52-7	8270D	290	U	290	20	ug/kg	2	
1,1'-Biphenyl	92-52-4	8270D	290	U	290	12	ug/kg	2	
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	12	ug/kg	2	
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	26	ug/kg	2	
Caprolactam	105-60-2	8270D	290	U	290	20	ug/kg	2	
Carbazole	86-74-8	8270D	290	U	290	17	ug/kg	2	
4-Chloro-3-methyl phenol	59-50-7	8270D	290	UJ ~~U~~	290	9.9	ug/kg	2	SSL
4-Chloroaniline	106-47-8	8270D	290	U	290	8.0	ug/kg	2	
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	2	
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	2	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	2	
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	2	
2-Chlorophenol	95-57-8	8270D	290	UJ ~~U~~	290	11	ug/kg	2	SSL
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	2	
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	2	
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	42	ug/kg	2	
2,4-Dichlorophenol	120-83-2	8270D	290	UJ ~~U~~	290	12	ug/kg	2	SSL
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	2	
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	2	
2,4-Dimethylphenol	105-67-9	8270D	290	UJ ~~U~~	290	14	ug/kg	2	SSL
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	2	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	UJ ~~U~~	460	150	ug/kg	2	SSL
2,4-Dinitrophenol	51-28-5	8270D	390	UJ U	390	130	ug/kg	2	SSL
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	2	
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	2	
Di-n-octylphthalate	117-84-0	8270D	290	U	290	38	ug/kg	2	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	290	U	290	14	ug/kg	2	
Hexachlorobenzene	118-74-1	8270D	290	U	290	18	ug/kg	2	
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	2	
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	2	
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	2	
Isophorone	78-59-1	8270D	210	U	210	8.7	ug/kg	2	
2-Methylnaphthalene	91-57-6	8270D	290	U	290	12	ug/kg	2	
2-Methylphenol	95-48-7	8270D	290	UJ ~~U~~	290	7.1	ug/kg	2	SSL
3 & 4-Methylphenol	106-44-5	8270D	79	↓ ~~U~~	79	14	ug/kg	2	SSL
2-Nitroaniline	88-74-4	8270D	290	U	290	27	ug/kg	2	
3-Nitroaniline	99-09-2	8270D	290	U	290	46	ug/kg	2	
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	2	
Nitrobenzene	98-95-3	8270D	290	U	290	6.4	ug/kg	2	
2-Nitrophenol	88-75-5	8270D	290	UJ U	290	21	ug/kg	2	SSL
4-Nitrophenol	100-02-7	8270D	350	UJ U	350	110	ug/kg	2	SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
11/14/10

13RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1846	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	11/02/2009 0631	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	2
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	10	ug/kg	2
Pentachlorophenol	87-86-5	8270D	500	UJ ~~U~~	500	170	ug/kg	2 SSL
Phenol	108-95-2	8270D	290	~~U~~	290	11	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	290	~~U~~	290	11	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	290	~~U~~	290	12	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		37	35-100		37	35-100
2-Fluorobiphenyl	N	37	45-105	N	35	45-105
Terphenyl-d14		42	30-125		68	30-125
2-Fluorophenol		43	35-105	N	34	35-105
Phenol-d5		44	40-100	N	34	40-100
2,4,6-Tribromophenol		56	35-125		60	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/4/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/31/2009 0312	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	280	R ~~U~~	280	20	ug/kg	2 CC
Atrazine	1912-24-9	8270D	280	UJ ~~U~~	280	19	ug/kg	2 CCH
Benzaldehyde	100-52-7	8270D	280	UJ ~~U~~	280	19	ug/kg	2 CCH
1,1'-Biphenyl	92-52-4	8270D	280	R ~~U~~	280	11	ug/kg	2 CC
4-Bromophenyl phenyl ether	101-55-3	8270D	280	U	280	11	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	280	U	280	25	ug/kg	2
Caprolactam	105-60-2	8270D	280	R ~~U~~	280	19	ug/kg	2 CC
Carbazole	86-74-8	8270D	280	U	280	16	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	280	U	280	9.4	ug/kg	2
4-Chloroaniline	106-47-8	8270D	280	UJ ~~U~~	280	7.6	ug/kg	2 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	280	U	280	11	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	37	U	37	10	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	280	U	280	12	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	280	U	280	12	ug/kg	2
2-Chlorophenol	95-57-8	8270D	280	U	280	10	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	280	U	280	12	ug/kg	2
Dibenzofuran	132-64-9	8270D	280	U	280	11	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	280	U	280	40	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	280	U	280	11	ug/kg	2
Diethylphthalate	84-66-2	8270D	280	U	280	12	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	280	U	280	12	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	280	U	280	13	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	280	U	280	20	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	440	U	440	150	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	370	U	370	120	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	280	U	280	20	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	280	U	280	19	ug/kg	2
Di-n-octylphthalate	**117-84-0**	**8270D**	**47**	**J**	**280**	**36**	**ug/kg**	**2**
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	280 ~~52~~	U ~~J~~	**280**	**13**	**ug/kg**	**2 FBL**
Hexachlorobenzene	118-74-1	8270D	280	U	280	17	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	280	U	280	12	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	280	U	280	27	ug/kg	2
Hexachloroethane	67-72-1	8270D	280	U	280	9.9	ug/kg	2
Isophorone	78-59-1	8270D	200	U	200	8.3	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	280	U	280	11	ug/kg	2
2-Methylphenol	95-48-7	8270D	280	U	280	6.7	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	75	U	75	13	ug/kg	2
2-Nitroaniline	88-74-4	8270D	280	U	280	26	ug/kg	2
3-Nitroaniline	99-09-2	8270D	280	U	280	44	ug/kg	2
4-Nitroaniline	100-01-6	8270D	280	U	280	21	ug/kg	2
Nitrobenzene	98-95-3	8270D	280	U	280	6.0	ug/kg	2
2-Nitrophenol	88-75-5	8270D	280	U	280	20	ug/kg	2
4-Nitrophenol	100-02-7	8270D	330	U	330	110	ug/kg	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	280	U	280	15	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/31/2009 0312	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	280	U	280	9.6	ug/kg	2
Pentachlorophenol	87-86-5	8270D	470	U	470	160	ug/kg	2
Phenol	108-95-2	8270D	280	U	280	10	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	280	U	280	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	280	U	280	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		49	35-100
2-Fluorobiphenyl		48	45-105
Terphenyl-d14		58	30-125
2-Fluorophenol		49	35-105
Phenol-d5		51	40-100
2,4,6-Tribromophenol		55	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WJ
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1925	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0047	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	270 UJ	U	270	19	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	270	U	270	18	ug/kg	1
Benzaldehyde	100-52-7	8270D	270	U	270	18	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	8300	U	8300	330	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	270	U	270	11	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	270	U	270	24	ug/kg	1
Caprolactam	105-60-2	8270D	270	U	270	18	ug/kg	1
Carbazole	86-74-8	8270D	270	U	270	15	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	270 UJ	U	270	9.0	ug/kg	1 BSL
4-Chloroaniline	106-47-8	8270D	270 UJ	U	270	7.3	ug/kg	1 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	270	U	270	11	ug/kg	1 SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	35	U	35	9.9	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	270	U	270	12	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	270	U	270	12	ug/kg	1
2-Chlorophenol	95-57-8	8270D	270	U	270	9.9	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	270 UJ	U	270	12	ug/kg	1 BSL
Dibenzofuran	132-64-9	8270D	270	U	270	11	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	270	U	270	39	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	270	U	270	11	ug/kg	1
Diethylphthalate	84-66-2	8270D	270 UJ	U	270	12	ug/kg	1 SSL
Dimethyl phthalate	131-11-3	8270D	270	U	270	12	ug/kg	1 SSL
2,4-Dimethylphenol	105-67-9	8270D	270	U	270	13	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	270 UJ	U	270	19	ug/kg	1 BSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	420	U	420	140	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	350	U	350	120	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	270 UJ	U	270	19	ug/kg	1 BSL
2,6-Dinitrotoluene	606-20-2	8270D	270	U	270	18	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	270	U	270	34	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	270	U	270	13	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	270	U	270	16	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	270	U	270	12	ug/kg	1 SSL
Hexachlorocyclopentadiene	77-47-4	8270D	270	U	270	26	ug/kg	1
Hexachloroethane	67-72-1	8270D	270	U	270	9.6	ug/kg	1
Isophorone	78-59-1	8270D	190	U	190	8.0	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	270	U	270	11	ug/kg	1
2-Methylphenol	95-48-7	8270D	270	U	270	6.5	ug/kg	1 BSL
3 & 4-Methylphenol	106-44-5	8270D	72	U	72	13	ug/kg	1 BSL
2-Nitroaniline	88-74-4	8270D	270 UJ	U	270	25	ug/kg	1 SSL
3-Nitroaniline	99-09-2	8270D	270	U	270	42	ug/kg	1
4-Nitroaniline	100-01-6	8270D	270	U	270	20	ug/kg	1
Nitrobenzene	98-95-3	8270D	270	U	270	5.8	ug/kg	1 BSL
2-Nitrophenol	88-75-5	8270D	270 UJ	U	270	19	ug/kg	1
4-Nitrophenol	100-02-7	8270D	320	U	320	100	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

KW
11/19/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1925	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0047	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	270 UJ	U	270	14	ug/kg	1 BSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	270 ↓	U	270	9.3	ug/kg	1 ↓
Pentachlorophenol	87-86-5	8270D	450	U	450	150	ug/kg	1
Phenol	108-95-2	8270D	270 UJ	U	270	9.7	ug/kg	1 BSL
2,4,5-Trichlorophenol	95-95-4	8270D	270 ↓	U	270	10	ug/kg	1 ↓
2,4,6-Trichlorophenol	88-06-2	8270D	270 ↓	U	270	11	ug/kg	1 ↓

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	33	35-100	N	30	35-100
2-Fluorobiphenyl	N	38	45-105	N	33	45-105
Terphenyl-d14		39	30-125		75	30-125
2-Fluorophenol		35	35-105	N	32	35-105
Phenol-d5	N	36	40-100	N	32	40-100
2,4,6-Tribromophenol		43	35-125		63	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
11/4/10

ISRE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1925	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0047	CRM	10/20/2009 1420	19901

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	270 R	U	270	19	ug/kg	2 ICL
Atrazine	1912-24-9	8270D	270 UJ	U	270	18	ug/kg	2 ICB
Benzaldehyde	100-52-7	8270D	270 UJ	U	270	18	ug/kg	2 ICB
1,1'-Biphenyl	92-52-4	8270D	8300 R	U	8300	830	ug/kg	2 ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	270 UJ	U	270	11	ug/kg	2 SSL
Butyl benzyl phthalate	85-68-7	8270D	270 UJ	U	270	24	ug/kg	2 ↓
Caprolactam	105-60-2	8270D	270 UJ	U	270	18	ug/kg	2 ICB
Carbazole	86-74-8	8270D	270	U	270	15	ug/kg	2 SSL
4-Chloro-3-methyl phenol	59-50-7	8270D	270	U	270	9.1	ug/kg	2 ↓
4-Chloroaniline	106-47-8	8270D	270 UJ	U	270	7.3	ug/kg	2 ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	270	U	270	11	ug/kg	2 SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	36	U	36	9.9	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	270	U	270	12	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	270	U	270	12	ug/kg	2
2-Chlorophenol	95-57-8	8270D	270	U	270	9.9	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	270	U	270	12	ug/kg	2
Dibenzofuran	132-64-9	8270D	270	U	270	11	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	270	U	270	39	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	270	U	270	11	ug/kg	2
Diethylphthalate	84-66-2	8270D	270	U	270	12	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	270	U	270	12	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	270	U	270	13	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	270	U	270	19	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	420	U	420	140	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	360	U	360	120	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	270	U	270	19	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	270	U	270	18	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	270	U	270	35	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	~~270 UJ~~	**B**	**270**	**13**	**ug/kg**	**2** FBL
Hexachlorobenzene	118-74-1	8270D	270 UJ	U	270	16	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	270	U	270	12	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	270	U	270	26	ug/kg	2
Hexachloroethane	67-72-1	8270D	270	U	270	9.6	ug/kg	2
Isophorone	78-59-1	8270D	190	U	190	8.0	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	270	U	270	11	ug/kg	2
2-Methylphenol	95-48-7	8270D	270	U	270	6.5	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	72	U	72	13	ug/kg	2
2-Nitroaniline	88-74-4	8270D	270	U	270	25	ug/kg	2
3-Nitroaniline	99-09-2	8270D	270	U	270	42	ug/kg	2
4-Nitroaniline	100-01-6	8270D	270	U	270	21	ug/kg	2
Nitrobenzene	98-95-3	8270D	270	U	270	5.8	ug/kg	2
2-Nitrophenol	88-75-5	8270D	270	U	270	19	ug/kg	2
4-Nitrophenol	100-02-7	8270D	320	U	320	100	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
1/14/10

15RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1925	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0047	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	270 UJ	U	270	14	ug/kg	2 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	270	U	270	9.3	ug/kg	2
Pentachlorophenol	87-86-5	8270D	450	U	450	150	ug/kg	2
Phenol	108-95-2	8270D	270	U	270	9.7	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	270	U	270	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	270	U	270	11	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	33	35-100	N	30	35-100
2-Fluorobiphenyl	N	38	45-105	N	33	45-105
Terphenyl-d14		39	30-125		75	30-125
2-Fluorophenol		35	35-105	N	32	35-105
Phenol-d5	N	36	40-100	N	32	40-100
2,4,6-Tribromophenol		43	35-125		63	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

pm
1/14/10

16

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1945	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0106	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	270 UJ	~~U~~	270	20	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	270	U	270	18	ug/kg	1
Benzaldehyde	100-52-7	8270D	270	U	270	18	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	8300	U	8300	330	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	270	U	270	11	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	270	U	270	24	ug/kg	1
Caprolactam	105-60-2	8270D	270	U	270	18	ug/kg	1
Carbazole	86-74-8	8270D	270	U	270	15	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	270	U	270	9.1	ug/kg	1
4-Chloroaniline	106-47-8	8270D	270 UJ	~~U~~	270	7.4	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	270	U	270	11	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	36	U	36	10	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	270	U	270	12	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	270	U	270	12	ug/kg	1
2-Chlorophenol	95-57-8	8270D	270	U	270	10	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	270	U	270	12	ug/kg	1
Dibenzofuran	132-64-9	8270D	270	U	270	11	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	270	U	270	39	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	270	U	270	11	ug/kg	1
Diethylphthalate	84-66-2	8270D	270	U	270	12	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	270	U	270	12	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	270	U	270	13	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	270	U	270	20	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	420	U	420	140	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	360	U	360	120	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	270	U	270	20	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	270	U	270	18	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	270	U	270	35	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	270	U	270	13	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	270	U	270	16	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	270	U	270	12	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	270	U	270	26	ug/kg	1
Hexachloroethane	67-72-1	8270D	270	U	270	9.6	ug/kg	1
Isophorone	78-59-1	8270D	200	U	200	8.0	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	270	U	270	11	ug/kg	1
2-Methylphenol	95-48-7	8270D	270	U	270	6.5	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	73	U	73	13	ug/kg	1
2-Nitroaniline	88-74-4	8270D	270	U	270	25	ug/kg	1
3-Nitroaniline	99-09-2	8270D	270	U	270	42	ug/kg	1
4-Nitroaniline	100-01-6	8270D	270	U	270	21	ug/kg	1
Nitrobenzene	98-95-3	8270D	270	U	270	5.9	ug/kg	1
2-Nitrophenol	88-75-5	8270D	270	U	270	20	ug/kg	1
4-Nitrophenol	100-02-7	8270D	330	U	330	100	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1945	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0106	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	270	UJ U	270	14	ug/kg	1 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	270	U	270	9.3	ug/kg	1
Pentachlorophenol	87-86-5	8270D	460	U	460	150	ug/kg	1
Phenol	108-95-2	8270D	270	U	270	9.8	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	270	U	270	10	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	270	U	270	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	29	35-100	N	20	35-100
2-Fluorobiphenyl	N	33	45-105	N	22	45-105
Terphenyl-d14		37	30-125		65	30-125
2-Fluorophenol	N	33	35-105	N	23	35-105
Phenol-d5	N	36	40-100	N	22	40-100
2,4,6-Tribromophenol	N	33	35-125		58	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/14/10

16RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1945	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0106	CRM	10/20/2009 1420	19901

Use 0mg/kg

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	270 R	U	270	19	ug/kg	2 ICL
Atrazine	1912-24-9	8270D	270 UJ	U	270	18	ug/kg	2 ICB
Benzaldehyde	100-52-7	8270D	270 UJ	U	270	18	ug/kg	2 ICB
1,1'-Biphenyl	92-52-4	8270D	8300 R	U	8300	330	ug/kg	2 ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	270 UJ	U	270	11	ug/kg	2 SSL
Butyl benzyl phthalate	85-68-7	8270D	270 UJ	U	270	24	ug/kg	2 ↓
Caprolactam	105-60-2	8270D	270 UJ	U	270	18	ug/kg	2 ICB
Carbazole	86-74-8	8270D	270	U	270	15	ug/kg	2 SSL
4-Chloro-3-methyl phenol	59-50-7	8270D	270 ↓	U	270	9.0	ug/kg	2 ↓
4-Chloroaniline	106-47-8	8270D	270 UJ	U	270	7.3	ug/kg	2 ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	270	U	270	11	ug/kg	2 SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	35	U	35	9.9	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	270	U	270	12	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	270	U	270	12	ug/kg	2
2-Chlorophenol	95-57-8	8270D	270	U	270	9.9	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	270	U	270	12	ug/kg	2
Dibenzofuran	132-64-9	8270D	270	U	270	11	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	270	U	270	39	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	270	U	270	11	ug/kg	2
Diethylphthalate	84-66-2	8270D	270	U	270	12	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	270	U	270	12	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	270	U	270	13	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	270	U	270	19	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	420	U	420	140	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	350 UJ	U	350	120	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	270 UJ	U	270	19	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	270	U	270	18	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	270	U	270	34	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	270 ~~UJ~~	~~B~~	**270**	**13**	**ug/kg**	**2** ~~PBL~~
Hexachlorobenzene	118-74-1	8270D	270 UJ	U	270	16	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	270	U	270	12	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	270	U	270	26	ug/kg	2
Hexachloroethane	67-72-1	8270D	270	U	270	9.6	ug/kg	2
Isophorone	78-59-1	8270D	190	U	190	7.9	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	270	U	270	11	ug/kg	2
2-Methylphenol	95-48-7	8270D	270	U	270	6.4	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	72	U	72	13	ug/kg	2
2-Nitroaniline	88-74-4	8270D	270	U	270	25	ug/kg	2
3-Nitroaniline	99-09-2	8270D	270	U	270	42	ug/kg	2
4-Nitroaniline	100-01-6	8270D	270	U	270	20	ug/kg	2
Nitrobenzene	98-95-3	8270D	270	U	270	5.8	ug/kg	2
2-Nitrophenol	88-75-5	8270D	270	U	270	19	ug/kg	2
4-Nitrophenol	100-02-7	8270D	320	U	320	100	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

16RE

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/21/2009 1945	CRM	10/14/2009 1147	19554
2	3550C	8270D	1	10/23/2009 0106	CRM	10/20/2009 1420	19901

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	270 UJ	U	270	14	ug/kg	2 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	270	U	270	9.2	ug/kg	2
Pentachlorophenol	87-86-5	8270D	450	U	450	150	ug/kg	2
Phenol	108-95-2	8270D	270	U	270	9.7	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	270	U	270	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	270	U	270	11	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	29	35-100	N	20	35-100
2-Fluorobiphenyl	N	33	45-105	N	22	45-105
Terphenyl-d14		37	30-125		65	30-125
2-Fluorophenol	N	33	35-105	N	23	35-105
Phenol-d5	N	36	40-100	N	22	40-100
2,4,6-Tribromophenol	N	33	35-125		58	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/23/2009 0124	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	280	R ~~U~~	280	20	ug/kg	2	ICL
Atrazine	1912-24-9	8270D	280	UJ U	280	19	ug/kg	2	ICB
Benzaldehyde	100-52-7	8270D	280	UJ U	280	19	ug/kg	2	↓
1,1'-Biphenyl	92-52-4	8270D	8100	R U	8100	320	ug/kg	2	ICL
4-Bromophenyl phenyl ether	101-55-3	8270D	280	U	280	11	ug/kg	2	
Butyl benzyl phthalate	85-68-7	8270D	280	U	280	25	ug/kg	2	
Caprolactam	105-60-2	8270D	280	UJ ~~U~~	280	19	ug/kg	2	ICB
Carbazole	86-74-8	8270D	280	U	280	16	ug/kg	2	
4-Chloro-3-methyl phenol	59-50-7	8270D	280	U	280	9.5	ug/kg	2	
4-Chloroaniline	106-47-8	8270D	280	UJ ~~U~~	280	7.7	ug/kg	2	ICB
bis(2-Chloroethoxy)methane	111-91-1	8270D	280	U	280	11	ug/kg	2	
bis(2-Chloroethyl)ether	111-44-4	8270D	37	U	37	10	ug/kg	2	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	280	U	280	12	ug/kg	2	
2-Chloronaphthalene	91-58-7	8270D	280	U	280	12	ug/kg	2	
2-Chlorophenol	95-57-8	8270D	280	U	280	10	ug/kg	2	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	280	U	280	12	ug/kg	2	
Dibenzofuran	132-64-9	8270D	280	U	280	11	ug/kg	2	
3,3'-Dichlorobenzidine	91-94-1	8270D	280	U	280	41	ug/kg	2	
2,4-Dichlorophenol	120-83-2	8270D	280	U	280	11	ug/kg	2	
Diethylphthalate	84-66-2	8270D	280	U	280	12	ug/kg	2	
Dimethyl phthalate	131-11-3	8270D	280	U	280	12	ug/kg	2	
2,4-Dimethylphenol	105-67-9	8270D	280	U	280	14	ug/kg	2	
Di-n-butyl phthalate	84-74-2	8270D	280	U	280	20	ug/kg	2	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	440	R ~~U~~	440	150	ug/kg	2	MSL
2,4-Dinitrophenol	51-28-5	8270D	370	R ~~U~~	370	120	ug/kg	2	↓
2,4-Dinitrotoluene	121-14-2	8270D	280	U	280	20	ug/kg	2	
2,6-Dinitrotoluene	606-20-2	8270D	280	U	280	19	ug/kg	2	
Di-n-octylphthalate	117-84-0	8270D	280	U	280	36	ug/kg	2	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	280	U	280	14	ug/kg	2	
Hexachlorobenzene	118-74-1	8270D	280	U	280	17	ug/kg	2	
Hexachlorobutadiene	87-68-3	8270D	280	UJ ~~U~~	280	12	ug/kg	2	MSL
Hexachlorocyclopentadiene	77-47-4	8270D	280	R ~~U~~	280	27	ug/kg	2	↓
Hexachloroethane	67-72-1	8270D	280	UJ ~~U~~	280	10	ug/kg	2	↓
Isophorone	78-59-1	8270D	200	U	200	8.3	ug/kg	2	
2-Methylnaphthalene	91-57-6	8270D	280	U	280	11	ug/kg	2	
2-Methylphenol	95-48-7	8270D	280	U	280	6.8	ug/kg	2	
3 & 4-Methylphenol	106-44-5	8270D	76	U	76	14	ug/kg	2	
2-Nitroaniline	88-74-4	8270D	280	U	280	26	ug/kg	2	
3-Nitroaniline	99-09-2	8270D	280	U	280	44	ug/kg	2	
4-Nitroaniline	100-01-6	8270D	280	U	280	21	ug/kg	2	
Nitrobenzene	98-95-3	8270D	280	U	280	6.1	ug/kg	2	
2-Nitrophenol	88-75-5	8270D	280	UJ ~~U~~	280	20	ug/kg	2	MSL
4-Nitrophenol	100-02-7	8270D	340	U	340	110	ug/kg	2	
N-Nitrosodi-n-propylamine	621-64-7	8270D	280	U	280	15	ug/kg	2	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

kw
1/14/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8270D	1	10/23/2009 0124	CRM	10/20/2009 1420	19901

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	280	U	280	9.7	ug/kg	2
Pentachlorophenol	87-86-5	8270D	470	U	470	160	ug/kg	2
Phenol	108-95-2	8270D	280	U	280	10	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	280	U	280	10	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	280	U	280	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		60	35-100
2-Fluorobiphenyl		60	45-105
Terphenyl-d14		67	30-125
2-Fluorophenol		63	35-105
Phenol-d5		62	40-100
2,4,6-Tribromophenol		63	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

LW
11/19/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ07039

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 14, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB109-07-08-09D	KJ07039-001	Soil
2	IR86-EB01-100609-SB	KJ07039-002	Water
3	IR86-TB01-100609	KJ07039-003	Water
4	IR86-SS100-09D	KJ07039-004	Soil
4RE	IR86-SS100-09DRE	KJ07039-004RE	Soil
5	IR86-TB01-100709	KJ07039-005	Water
6	IR86-SB100-06-07-09D	KJ07039-006	Soil
7	IR86-SS109-09D	KJ07039-007	Soil
8	IR86-TB02-100809	KJ07039-008	Water
9	IR86-EB01-100809	KJ07039-009	Water
10	IR86-SB101-06-07-09D	KJ07039-010	Soil
11	IR86-SS104-0-0.5-09D	KJ07039-011	Soil
11RE	IR86-SS104-0-0.5-09DRE	KJ07039-011RE	Soil
12	IR86-SB105-05-06-09D	KJ07039-012	Soil
13	IR86-SB104-08-09-09D	KJ07039-013	Soil
14	IR86-EB01-100909-SB	KJ07039-014	Water
15	IR86-SS101-0-0.5-09D	KJ07039-015	Soil
15RE	IR86-SS101-0-0.5-09DRE	KJ07039-015RE	Soil
16	IR86-SB102-07-08-09D	KJ07039-016	Soil
17	IR86-SS102-0-0.5-09D	KJ07039-017	Soil
18	IR86-SS103-0-0.5-09D	KJ07039-018	Soil
19	IR86-SS103D-0-0.5-09D	KJ07039-019	Soil
19RE	IR86-SS103D-0-0.5-09DRE	KJ07039-019RE	Soil
20	IR86-SB103-08-09-09D	KJ07039-020	Soil
20RE	IR86-SB103-08-09-09DRE	KJ07039-020RE	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - EDS sample ID #4 was reanalyzed outside of tune due to instrument malfunction and all results were qualified (J/UJ). The reanalysis results should be used for reporting purposes.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/09/09	Chloromethane	30.70%	J/UJ	2, 3, 5, 8, 9
10/14/09	2-Hexanone	26.22%	J/UJ	14

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
4	Bromofluorobenzene	83%	J/UJ
11	Bromofluorobenzene	66%	J/UJ
11RE	Bromofluorobenzene	80%	J/UJ
15	Bromofluorobenzene	66%	J/UJ
	Toluene-d8	79%	
15RE	Bromofluorobenzene	65%	J/UJ
19	Bromofluorobenzene	81%	J/UJ
19RE	Bromofluorobenzene	84%	J/UJ
20	Bromofluorobenzene	78%	J/UJ
20RE	Bromofluorobenzene	82%	J/UJ

MS/MSD - A MS/MSD sample was not included in this data package.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19481	Chloromethane	133%	None	All ND
KQ19582	1,2-Dibromoethane (EDB)	79%	J/UJ	14

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
11	IS4=1,4-Dichlorobenzene-d4	Low	None - See surrogates
11RE	IS4=1,4-Dichlorobenzene-d4	Low	None - See surrogates

Sample ID	Internal Standard	Area Count	Qualifier
15	IS4=1,4-Dichlorobenzene-d4	Low	None - See surrogates

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19481	1,2,4-Trichlorobenzene	0.19	0.95	None	All ND

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-100609-SB	1,1-Dichloroethene	0.12	0.60	None	All ND
IR86-TB01-100609	None - ND	-	-	-	-
IR86-TB01-100709	None - ND	-	-	-	-
IR86-TB02-100809	Methylene chloride	0.91	9.1	None	All ND
IR86-EB01-100809	None - ND	-	-	-	-
IR86-EB01-100909-SB	None - ND	-	-	-	-
IR86-FB100909	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS103-0-0.5-09D ug/kg	IR86-SS103D-0-0.5-09D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Several samples were reanalyzed due to surrogate deficiencies and/or internal standard deficiencies. See Form Is for which to report.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2141	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**15**	**J**	**19**	**1.7**	**ug/kg**	**1**
Benzene	71-43-2	8260B	4.6	U	4.6	1.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	46	U	46	1.0	ug/kg	1
Bromoform	75-25-2	8260B	9.3	U	9.3	0.65	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.3	U	9.3	1.7	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.3	U	9.3	2.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.6	U	4.6	1.2	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.6	U	4.6	1.7	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.6	U	4.6	1.4	ug/kg	1
Chloroethane	75-00-3	8260B	4.6	U	4.6	1.2	ug/kg	1
Chloroform	67-66-3	8260B	4.6	U	4.6	0.77	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.6	U	4.6	0.93	ug/kg	1
Cyclohexane	110-82-7	8260B	4.6	U	4.6	0.62	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.6	U	4.6	1.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.6	U	4.6	0.58	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.6	U	4.6	0.79	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.6	U	4.6	0.86	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.6	U	4.6	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.6	U	4.6	1.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.6	U	4.6	1.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.6	U	4.6	0.68	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.6	U	4.6	0.93	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.6	U	4.6	1.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.6	U	4.6	0.70	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.6	U	4.6	1.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.6	U	4.6	0.84	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.6	U	4.6	0.63	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.6	U	4.6	0.76	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.6	U	4.6	1.0	ug/kg	1
2-Hexanone	591-78-6	8260B	9.3	U	9.3	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.6	U	4.6	0.74	ug/kg	1
Methyl acetate	79-20-9	8260B	4.6	U	4.6	0.62	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.6	U	4.6	0.37	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.3	U	9.3	1.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.6	U	4.6	0.57	ug/kg	1
Methylene chloride	75-09-2	8260B	4.6	U	4.6	2.4	ug/kg	1
Styrene	100-42-5	8260B	4.6	U	4.6	1.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.6	U	4.6	0.44	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.6	U	4.6	2.1	ug/kg	1
Toluene	108-88-3	8260B	4.6	U	4.6	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.6	U	4.6	1.9	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.6	U	4.6	0.93	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.6	U	4.6	0.79	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	4.6	U	4.6	0.73	ug/kg	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
11/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB109-07-08-09D**
Date Sampled: **10/06/2009 1500**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-001**
Matrix: **Solid**
% Solids: **78.0** **10/07/2009 2238**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2141	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.6	U	4.6	1.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.6	U	4.6	1.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.6	U	4.6	0.80	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.6	U	4.6	2.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		96	85-120
1,2-Dichloroethane-d4		72	53-142
Toluene-d8		110	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/14/10

Volatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**

Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1638	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UJ ~~U~~	1.0	0.17	ug/L	1 CCH
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.12**	**J**	**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

Volatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100609-SB**
Date Sampled: **10/06/2009 1545**
Date Received: **10/07/2009**
Laboratory ID: **KJ07039-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1638	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-120
Toluene-d8		99	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
11/14/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-100609**
Date Sampled: **10/06/2009**
Date Received: **10/07/2009**
Laboratory ID: **KJ07039-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1659	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UJ ~~U~~	1.0	0.17	ug/L	1 OCH
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/14/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-100609**
Date Sampled: **10/06/2009**
Date Received: **10/07/2009**
Laboratory ID: **KJ07039-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1659	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-120
Toluene-d8		100	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/14/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2204	MZ		19449
2	5035	8260B	1	10/20/2009 0837	DLB		20081

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	23 UJ	U	23	2.1	ug/kg	1 SSL
Benzene	71-43-2	8260B	5.8	U	5.8	1.3	ug/kg	1
Bromodichloromethane	75-27-4	8260B	58	U	58	1.3	ug/kg	1
Bromoform	75-25-2	8260B	12	U	12	0.81	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	12	U	12	2.1	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	12	U	12	2.8	ug/kg	1
Carbon disulfide	75-15-0	8260B	5.8	U	5.8	1.5	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	5.8	U	5.8	2.1	ug/kg	1
Chlorobenzene	108-90-7	8260B	5.8	U	5.8	1.7	ug/kg	1
Chloroethane	75-00-3	8260B	5.8	U	5.8	1.5	ug/kg	1
Chloroform	67-66-3	8260B	5.8	U	5.8	0.96	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	5.8	U	5.8	1.2	ug/kg	1
Cyclohexane	110-82-7	8260B	5.8	U	5.8	0.78	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.8	U	5.8	1.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	5.8	U	5.8	0.73	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.8	U	5.8	0.98	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	5.8	U	5.8	1.1	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	5.8	U	5.8	1.5	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	5.8	U	5.8	1.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	5.8	U	5.8	1.8	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	5.8	U	5.8	0.84	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	5.8	U	5.8	1.2	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	5.8	U	5.8	2.0	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	5.8	U	5.8	0.87	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	5.8	U	5.8	1.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	5.8	U	5.8	1.0	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	5.8	U	5.8	0.78	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	5.8	U	5.8	0.94	ug/kg	1
Ethylbenzene	100-41-4	8260B	5.8	U	5.8	1.3	ug/kg	1
2-Hexanone	591-78-6	8260B	12	U	12	1.5	ug/kg	1
Isopropylbenzene	98-82-8	8260B	5.8	U	5.8	0.92	ug/kg	1
Methyl acetate	79-20-9	8260B	5.8	U	5.8	0.77	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.8	U	5.8	0.46	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	12	U	12	1.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	5.8	U	5.8	0.70	ug/kg	1
Methylene chloride	75-09-2	8260B	5.8	U	5.8	3.0	ug/kg	1
Styrene	100-42-5	8260B	5.8	U	5.8	1.3	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.8	U	5.8	0.54	ug/kg	1
Tetrachloroethene	127-18-4	8260B	5.8	U	5.8	2.6	ug/kg	1
Toluene	108-88-3	8260B	5.8	U	5.8	1.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.8	U	5.8	2.4	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	5.8	U	5.8	1.2	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	5.8	U	5.8	0.98	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
1/14/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2204	MZ		19449
2	5035	8260B	1	10/20/2009 0837	DLB		20081

use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.8 UJ	U	5.8	0.91	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	5.8	U	5.8	2.2	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	5.8	U	5.8	1.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	5.8	U	5.8	0.99	ug/kg	1
Xylenes (total)	1330-20-7	8260B	5.8	U	5.8	3.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	83	85-120		95	85-120
1,2-Dichloroethane-d4		87	53-142		99	53-142
Toluene-d8		99	85-115		108	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

HRE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2204	MZ		19449
2	5035	8260B	1	10/20/2009 0837	DLB		20081

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**4.9**	J ~~J~~	**23**	**2.1**	**ug/kg**	**2** TN
Benzene	71-43-2	8260B	5.8	UJ ~~U~~	5.8	1.3	ug/kg	2
Bromodichloromethane	75-27-4	8260B	58	~~U~~	58	1.3	ug/kg	2
Bromoform	75-25-2	8260B	12	~~U~~	12	0.82	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	12	~~U~~	12	2.1	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	12	~~U~~	12	2.8	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.8	~~U~~	5.8	1.5	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.8	~~U~~	5.8	2.1	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.8	~~U~~	5.8	1.7	ug/kg	2
Chloroethane	75-00-3	8260B	5.8	~~U~~	5.8	1.5	ug/kg	2
Chloroform	67-66-3	8260B	5.8	~~U~~	5.8	0.97	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.8	~~U~~	5.8	1.2	ug/kg	2
Cyclohexane	110-82-7	8260B	5.8	~~U~~	5.8	0.79	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.8	~~U~~	5.8	1.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.8	~~U~~	5.8	0.73	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.8	~~U~~	5.8	0.99	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.8	~~U~~	5.8	1.1	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.8	~~U~~	5.8	1.5	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.8	~~U~~	5.8	1.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.8	~~U~~	5.8	1.9	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.8	~~U~~	5.8	0.85	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.8	~~U~~	5.8	1.2	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.8	~~U~~	5.8	2.0	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.8	~~U~~	5.8	0.89	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.8	~~U~~	5.8	1.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.8	~~U~~	5.8	1.1	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.8	~~U~~	5.8	0.79	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.8	~~U~~	5.8	0.96	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.8	~~U~~	5.8	1.3	ug/kg	2
2-Hexanone	591-78-6	8260B	12	~~U~~	12	1.5	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.8	~~U~~	5.8	0.93	ug/kg	2
Methyl acetate	79-20-9	8260B	5.8	~~U~~	5.8	0.78	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.8	~~U~~	5.8	0.47	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	12	~~U~~	12	1.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.8	~~U~~	5.8	0.71	ug/kg	2
Methylene chloride	75-09-2	8260B	5.8	~~U~~	5.8	3.0	ug/kg	2
Styrene	100-42-5	8260B	5.8	~~U~~	5.8	1.3	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.8	~~U~~	5.8	0.55	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.8	~~U~~	5.8	2.7	ug/kg	2
Toluene	108-88-3	8260B	5.8	~~U~~	5.8	1.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.8	~~U~~	5.8	2.4	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.8	~~U~~	5.8	1.2	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.8	~~U~~	5.8	0.99	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

4RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS100-09D**
Date Sampled: **10/07/2009 1450**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-004**
Matrix: **Solid**
% Solids: **89.7** **10/09/2009 0010**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2204	MZ		19449
2	5035	8260B	1	10/20/2009 0837	DLB		20081

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.8 UJ	U	5.8	0.92	ug/kg	2 TN
Trichloroethene	79-01-6	8260B	5.8	U	5.8	2.2	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.8	U	5.8	1.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.8	U	5.8	1.0	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.8	U	5.8	3.4	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	83	85-120		95	85-120
1,2-Dichloroethane-d4		87	53-142		99	53-142
Toluene-d8		99	85-115		108	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
1/14/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-100709**
Date Sampled: **10/07/2009**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1721	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UJ ~~U~~	1.0	0.17	ug/L	1 CH
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-100709**
Date Sampled: **10/07/2009**
Date Received: **10/08/2009**
Laboratory ID: **KJ07039-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1721	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/14/10

6

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB100-06-07-09D**
Date Sampled: **10/08/2009 1135**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-006**
Matrix: **Solid**
% Solids: **82.1** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2227	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	19	U	19	1.7	ug/kg	1
Benzene	71-43-2	8260B	4.7	U	4.7	1.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	47	U	47	1.0	ug/kg	1
Bromoform	75-25-2	8260B	9.4	U	9.4	0.66	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.4	U	9.4	1.7	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.4	U	9.4	2.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.7	U	4.7	1.2	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.7	U	4.7	1.7	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.7	U	4.7	1.4	ug/kg	1
Chloroethane	75-00-3	8260B	4.7	U	4.7	1.2	ug/kg	1
Chloroform	67-66-3	8260B	4.7	U	4.7	0.78	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.7	U	4.7	0.94	ug/kg	1
Cyclohexane	110-82-7	8260B	4.7	U	4.7	0.63	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.7	U	4.7	1.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.7	U	4.7	0.59	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.7	U	4.7	0.80	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.7	U	4.7	0.87	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.7	U	4.7	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.7	U	4.7	1.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.7	U	4.7	1.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.7	U	4.7	0.68	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.7	U	4.7	0.94	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.7	U	4.7	1.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.7	U	4.7	0.71	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.7	U	4.7	1.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.7	U	4.7	0.85	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.7	U	4.7	0.64	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.7	U	4.7	0.77	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.7	U	4.7	1.0	ug/kg	1
2-Hexanone	591-78-6	8260B	9.4	U	9.4	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.7	U	4.7	0.75	ug/kg	1
Methyl acetate	79-20-9	8260B	4.7	U	4.7	0.63	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.7	U	4.7	0.37	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.4	U	9.4	1.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.7	U	4.7	0.57	ug/kg	1
Methylene chloride	75-09-2	8260B	4.7	U	4.7	2.4	ug/kg	1
Styrene	100-42-5	8260B	4.7	U	4.7	1.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.7	U	4.7	0.44	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.7	U	4.7	2.2	ug/kg	1
Toluene	108-88-3	8260B	4.7	U	4.7	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.7	U	4.7	2.0	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.7	U	4.7	0.94	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.7	U	4.7	0.80	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	4.7	U	4.7	0.74	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

6

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-006**
Description: **IR86-SB100-06-07-09D**	Matrix: **Solid**
Date Sampled: **10/08/2009 1135**	% Solids: **82.1** **10/09/2009 2140**
Date Received: **10/09/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2227	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.7	U	4.7	1.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.7	U	4.7	1.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.7	U	4.7	0.81	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.7	U	4.7	2.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		87	85-120
1,2-Dichloroethane-d4		91	53-142
Toluene-d8		100	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

aw
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1410	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	25	U	25	2.3	ug/kg	2
Benzene	71-43-2	8260B	6.3	U	6.3	1.4	ug/kg	2
Bromodichloromethane	75-27-4	8260B	63	U	63	1.4	ug/kg	2
Bromoform	75-25-2	8260B	13	U	13	0.89	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	13	U	13	2.3	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	13	U	13	3.0	ug/kg	2
Carbon disulfide	75-15-0	8260B	6.3	U	6.3	1.6	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	6.3	U	6.3	2.3	ug/kg	2
Chlorobenzene	108-90-7	8260B	6.3	U	6.3	1.9	ug/kg	2
Chloroethane	75-00-3	8260B	6.3	U	6.3	1.6	ug/kg	2
Chloroform	67-66-3	8260B	6.3	U	6.3	1.1	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	6.3	U	6.3	1.3	ug/kg	2
Cyclohexane	110-82-7	8260B	6.3	U	6.3	0.85	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	6.3	U	6.3	1.9	ug/kg	2
Dibromochloromethane	124-48-1	8260B	6.3	U	6.3	0.80	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	6.3	U	6.3	1.1	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	6.3	U	6.3	1.2	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	6.3	U	6.3	1.6	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	6.3	U	6.3	1.9	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	6.3	U	6.3	2.0	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	6.3	U	6.3	0.93	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	6.3	U	6.3	1.3	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	6.3	U	6.3	2.2	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	6.3	U	6.3	0.96	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	6.3	U	6.3	1.9	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	6.3	U	6.3	1.2	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	6.3	U	6.3	0.86	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	6.3	U	6.3	1.0	ug/kg	2
Ethylbenzene	100-41-4	8260B	6.3	U	6.3	1.4	ug/kg	2
2-Hexanone	591-78-6	8260B	13	U	13	1.6	ug/kg	2
Isopropylbenzene	98-82-8	8260B	6.3	U	6.3	1.0	ug/kg	2
Methyl acetate	79-20-9	8260B	6.3	U	6.3	0.85	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.3	U	6.3	0.51	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	13	U	13	1.9	ug/kg	2
Methylcyclohexane	108-87-2	8260B	6.3	U	6.3	0.77	ug/kg	2
Methylene chloride	75-09-2	8260B	6.3	U	6.3	3.3	ug/kg	2
Styrene	100-42-5	8260B	6.3	U	6.3	1.4	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	6.3	U	6.3	0.60	ug/kg	2
Tetrachloroethene	127-18-4	8260B	6.3	U	6.3	2.9	ug/kg	2
Toluene	108-88-3	8260B	6.3	U	6.3	1.8	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	6.3	U	6.3	2.7	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	6.3	U	6.3	1.3	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	6.3	U	6.3	1.1	ug/kg	2
1,1,2-Trichloroethane	79-00-5	8260B	6.3	U	6.3	1.0	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
1/14/10

7

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS109-09D**
Date Sampled: **10/08/2009 1145**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-007**
Matrix: **Solid**
% Solids: **88.8** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1410	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	6.3	U	6.3	2.4	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	6.3	U	6.3	1.9	ug/kg	2
Vinyl chloride	75-01-4	8260B	6.3	U	6.3	1.1	ug/kg	2
Xylenes (total)	1330-20-7	8260B	6.3	U	6.3	3.7	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		97	85-120
1,2-Dichloroethane-d4		108	53-142
Toluene-d8		111	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB02-100809**
Date Sampled: **10/08/2009**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-008**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1742	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UJ ~~U~~	1.0	0.17	ug/L	1 CCH
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	**75-09-2**	**8260B**	**0.91**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
11/14/10

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB02-100809**
Date Sampled: **10/08/2009**
Date Received: **10/08/2009**

Laboratory ID: **KJ07039-008**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1742	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

hw
1/14/10

9

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1803	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UJ ~~U~~	1.0	0.17	ug/L	1 CM
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100809**
Date Sampled: **10/08/2009 1545**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/09/2009 1803	MZ		19481

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2314	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	17	U	17	1.5	ug/kg	1
Benzene	71-43-2	8260B	4.2	U	4.2	0.93	ug/kg	1
Bromodichloromethane	75-27-4	8260B	42	U	42	0.93	ug/kg	1
Bromoform	75-25-2	8260B	8.4	U	8.4	0.59	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	8.4	U	8.4	1.5	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	8.4	U	8.4	2.0	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.2	U	4.2	1.1	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.2	U	4.2	1.5	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.2	U	4.2	1.3	ug/kg	1
Chloroethane	75-00-3	8260B	4.2	U	4.2	1.1	ug/kg	1
Chloroform	67-66-3	8260B	4.2	U	4.2	0.70	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.2	U	4.2	0.84	ug/kg	1
Cyclohexane	110-82-7	8260B	4.2	U	4.2	0.57	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.2	U	4.2	1.3	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.2	U	4.2	0.53	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.2	U	4.2	0.72	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.2	U	4.2	0.78	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.2	U	4.2	1.1	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.2	U	4.2	1.3	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.2	U	4.2	1.3	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.2	U	4.2	0.62	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.2	U	4.2	0.84	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.2	U	4.2	1.4	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.2	U	4.2	0.64	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.2	U	4.2	1.3	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.2	U	4.2	0.77	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.2	U	4.2	0.57	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.2	U	4.2	0.69	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.2	U	4.2	0.93	ug/kg	1
2-Hexanone	591-78-6	8260B	8.4	U	8.4	1.1	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.2	U	4.2	0.67	ug/kg	1
Methyl acetate	79-20-9	8260B	4.2	U	4.2	0.56	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.2	U	4.2	0.34	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	8.4	U	8.4	1.3	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.2	U	4.2	0.51	ug/kg	1
Methylene chloride	75-09-2	8260B	4.2	U	4.2	2.2	ug/kg	1
Styrene	100-42-5	8260B	4.2	U	4.2	0.93	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.2	U	4.2	0.40	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.2	U	4.2	1.9	ug/kg	1
Toluene	108-88-3	8260B	4.2	U	4.2	1.2	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.2	U	4.2	1.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.2	U	4.2	0.84	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.2	U	4.2	0.72	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	4.2	U	4.2	0.67	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB101-06-07-09D**
Date Sampled: **10/08/2009 1600**
Date Received: **10/09/2009**

Laboratory ID: **KJ07039-010**
Matrix: **Solid**
% Solids: **82.7** **10/09/2009 2140**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/11/2009 2314	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.2	U	4.2	1.6	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.2	U	4.2	1.3	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.2	U	4.2	0.73	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.2	U	4.2	2.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		86	85-120
1,2-Dichloroethane-d4		87	53-142
Toluene-d8		102	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
11/4/10

11

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0001	MZ		19449
2	5035	8260B	1	10/12/2009 0332	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	37 UJ	U	37	3.3	ug/kg	1 SSL
Benzene	71-43-2	8260B	9.2	U	9.2	2.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	92	U	92	2.0	ug/kg	1
Bromoform	75-25-2	8260B	18	U	18	1.3	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	18	U	18	3.3	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	18	U	18	4.4	ug/kg	1
Carbon disulfide	75-15-0	8260B	9.2	U	9.2	2.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	9.2	U	9.2	3.3	ug/kg	1
Chlorobenzene	108-90-7	8260B	9.2	U	9.2	2.7	ug/kg	1
Chloroethane	75-00-3	8260B	9.2	U	9.2	2.4	ug/kg	1
Chloroform	67-66-3	8260B	9.2	U	9.2	1.5	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	9.2	U	9.2	1.8	ug/kg	1
Cyclohexane	110-82-7	8260B	9.2	U	9.2	1.2	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	9.2	U	9.2	2.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	9.2	U	9.2	1.2	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	9.2	U	9.2	1.6	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	9.2 UJ	U	9.2	1.7	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	9.2	U	9.2	2.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	9.2	U	9.2	2.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	9.2	U	9.2	2.9	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	9.2	U	9.2	1.3	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	9.2	U	9.2	1.8	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	9.2	U	9.2	3.1	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	9.2	U	9.2	1.4	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	9.2	U	9.2	2.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	9.2	U	9.2	1.7	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	9.2	U	9.2	1.2	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	9.2	U	9.2	1.5	ug/kg	1
Ethylbenzene	100-41-4	8260B	9.2	U	9.2	2.0	ug/kg	1
2-Hexanone	591-78-6	8260B	18	U	18	2.4	ug/kg	1
Isopropylbenzene	98-82-8	8260B	9.2 UJ	U	9.2	1.5	ug/kg	1
Methyl acetate	79-20-9	8260B	9.2	U	9.2	1.2	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	9.2	U	9.2	0.73	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	18	U	18	2.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	9.2	U	9.2	1.1	ug/kg	1
Methylene chloride	75-09-2	8260B	9.2	U	9.2	4.8	ug/kg	1
Styrene	100-42-5	8260B	9.2	U	9.2	2.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	9.2 UJ	U	9.2	0.86	ug/kg	1
Tetrachloroethene	127-18-4	8260B	9.2	U	9.2	4.2	ug/kg	1
Toluene	108-88-3	8260B	9.2	U	9.2	2.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	9.2	U	9.2	3.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	9.2	U	9.2	1.8	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	9.2	U	9.2	1.6	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

11

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0001	MZ		19449
2	5035	8260B	1	10/12/2009 0332	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	9.2 UJ	~~U~~	9.2	1.4	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	9.2	~~U~~	9.2	3.5	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	9.2	~~U~~	9.2	2.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	9.2	~~U~~	9.2	1.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	9.2	~~U~~	9.2	5.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	66	85-120	N	80	85-120
1,2-Dichloroethane-d4		77	53-142		92	53-142
Toluene-d8		97	85-115		106	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

11RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0001	MZ		19449
2	5035	8260B	1	10/12/2009 0332	MZ		19449

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	52	~~U~~ UJ	52	4.7	ug/kg	2 SSL
Benzene	71-43-2	8260B	13	U	13	2.9	ug/kg	2
Bromodichloromethane	75-27-4	8260B	130	U	130	2.9	ug/kg	2
Bromoform	75-25-2	8260B	26	U	26	1.8	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	26	U	26	4.7	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	26	U	26	6.2	ug/kg	2
Carbon disulfide	75-15-0	8260B	13	U	13	3.4	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	13	U	13	4.7	ug/kg	2
Chlorobenzene	108-90-7	8260B	13	U	13	3.9	ug/kg	2
Chloroethane	75-00-3	8260B	13	U	13	3.4	ug/kg	2
Chloroform	67-66-3	8260B	13	U	13	2.2	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	13	U	13	2.6	ug/kg	2
Cyclohexane	110-82-7	8260B	13	U	13	1.8	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	13	U	13	3.9	ug/kg	2
Dibromochloromethane	124-48-1	8260B	13	U	13	1.6	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	13	U	13	2.2	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	13	U UJ	13	2.4	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	13	U	13	3.4	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	13	U	13	3.9	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	13	U	13	4.2	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	13	U	13	1.9	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	13	U	13	2.6	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	13	U	13	4.4	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	13	U	13	2.0	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	13	U	13	3.9	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	13	U	13	2.4	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	13	U	13	1.8	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	13	U	13	2.1	ug/kg	2
Ethylbenzene	100-41-4	8260B	13	U	13	2.9	ug/kg	2
2-Hexanone	591-78-6	8260B	26	U	26	3.4	ug/kg	2
Isopropylbenzene	98-82-8	8260B	13	~~U~~ UJ	13	2.1	ug/kg	2
Methyl acetate	79-20-9	8260B	13	U	13	1.7	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	13	U	13	1.0	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	26	U	26	3.9	ug/kg	2
Methylcyclohexane	108-87-2	8260B	13	U	13	1.6	ug/kg	2
Methylene chloride	75-09-2	8260B	13	U	13	6.8	ug/kg	2
Styrene	100-42-5	8260B	13	U	13	2.9	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	13	~~U~~ UJ	13	1.2	ug/kg	2
Tetrachloroethene	127-18-4	8260B	13	U	13	6.0	ug/kg	2
Toluene	108-88-3	8260B	13	U	13	3.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	13	U	13	5.5	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	13	U	13	2.6	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	13	U	13	2.2	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/14/10

11RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS104-0-0.5-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-011**
Matrix: **Solid**
% Solids: **85.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0001	MZ		19449
2	5035	8260B	1	10/12/2009 0332	MZ		19449

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	13	U UJ	13	2.1	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	13	U	13	4.9	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	13	U	13	3.9	ug/kg	2
Vinyl chloride	75-01-4	8260B	13	U	13	2.2	ug/kg	2
Xylenes (total)	1330-20-7	8260B	13	U N	13	7.5	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	66	85-120	N	80	85-120
1,2-Dichloroethane-d4		77	53-142		92	53-142
Toluene-d8		97	85-115		106	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

WJ
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1433	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	16	U	16	1.5	ug/kg	2
Benzene	71-43-2	8260B	4.1	U	4.1	0.89	ug/kg	2
Bromodichloromethane	75-27-4	8260B	41	U	41	0.89	ug/kg	2
Bromoform	75-25-2	8260B	8.1	U	8.1	0.57	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	8.1	U	8.1	1.5	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	8.1	U	8.1	1.9	ug/kg	2
Carbon disulfide	75-15-0	8260B	4.1	U	4.1	1.1	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	4.1	U	4.1	1.5	ug/kg	2
Chlorobenzene	108-90-7	8260B	4.1	U	4.1	1.2	ug/kg	2
Chloroethane	75-00-3	8260B	4.1	U	4.1	1.1	ug/kg	2
Chloroform	67-66-3	8260B	4.1	U	4.1	0.67	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	4.1	U	4.1	0.81	ug/kg	2
Cyclohexane	110-82-7	8260B	4.1	U	4.1	0.55	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.1	U	4.1	1.2	ug/kg	2
Dibromochloromethane	124-48-1	8260B	4.1	U	4.1	0.51	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.1	U	4.1	0.69	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	4.1	U	4.1	0.75	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	4.1	U	4.1	1.1	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	4.1	U	4.1	1.2	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	4.1	U	4.1	1.3	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	4.1	U	4.1	0.59	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	4.1	U	4.1	0.81	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	4.1	U	4.1	1.4	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	4.1	U	4.1	0.62	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	4.1	U	4.1	1.2	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	4.1	U	4.1	0.74	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	4.1	U	4.1	0.55	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	4.1	U	4.1	0.67	ug/kg	2
Ethylbenzene	100-41-4	8260B	4.1	U	4.1	0.89	ug/kg	2
2-Hexanone	591-78-6	8260B	8.1	U	8.1	1.1	ug/kg	2
Isopropylbenzene	98-82-8	8260B	4.1	U	4.1	0.65	ug/kg	2
Methyl acetate	79-20-9	8260B	4.1	U	4.1	0.54	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.1	U	4.1	0.32	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	8.1	U	8.1	1.2	ug/kg	2
Methylcyclohexane	108-87-2	8260B	4.1	U	4.1	0.49	ug/kg	2
Methylene chloride	75-09-2	8260B	4.1	U	4.1	2.1	ug/kg	2
Styrene	100-42-5	8260B	4.1	U	4.1	0.89	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.1	U	4.1	0.38	ug/kg	2
Tetrachloroethene	127-18-4	8260B	4.1	U	4.1	1.9	ug/kg	2
Toluene	108-88-3	8260B	4.1	U	4.1	1.1	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.1	U	4.1	1.7	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	4.1	U	4.1	0.81	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	4.1	U	4.1	0.69	ug/kg	2
1,1,2-Trichloroethane	79-00-5	8260B	4.1	U	4.1	0.64	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
1/14/10

12

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB105-05-06-09D**
Date Sampled: **10/09/2009 1600**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-012**
Matrix: **Solid**
% Solids: **84.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1433	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.1	U	4.1	1.5	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	4.1	U	4.1	1.2	ug/kg	2
Vinyl chloride	75-01-4	8260B	4.1	U	4.1	0.70	ug/kg	2
Xylenes (total)	1330-20-7	8260B	4.1	U	4.1	2.4	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		95	85-120
1,2-Dichloroethane-d4		101	53-142
Toluene-d8		108	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
1/14/10

13

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0048	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**25**	**J**	**62**	**5.5**	**ug/kg**	**1**
Benzene	71-43-2	8260B	15	U	15	3.4	ug/kg	1
Bromodichloromethane	75-27-4	8260B	150	U	150	3.4	ug/kg	1
Bromoform	75-25-2	8260B	31	U	31	2.2	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	31	U	31	5.5	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	31	U	31	7.4	ug/kg	1
Carbon disulfide	75-15-0	8260B	15	U	15	4.0	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.5	ug/kg	1
Chlorobenzene	108-90-7	8260B	15	U	15	4.6	ug/kg	1
Chloroethane	75-00-3	8260B	15	U	15	4.0	ug/kg	1
Chloroform	67-66-3	8260B	15	U	15	2.6	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	3.1	ug/kg	1
Cyclohexane	110-82-7	8260B	15	U	15	2.1	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15	U	15	4.6	ug/kg	1
Dibromochloromethane	124-48-1	8260B	15	U	15	1.9	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.6	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	15	U	15	2.9	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	15	U	15	4.0	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	15	U	15	4.6	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.9	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.2	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	15	U	15	3.1	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.2	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.3	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.6	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.8	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.1	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.5	ug/kg	1
Ethylbenzene	100-41-4	8260B	15	U	15	3.4	ug/kg	1
2-Hexanone	591-78-6	8260B	31	U	31	4.0	ug/kg	1
Isopropylbenzene	98-82-8	8260B	15	U	15	2.5	ug/kg	1
Methyl acetate	79-20-9	8260B	15	U	15	2.1	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	31	U	31	4.6	ug/kg	1
Methylcyclohexane	108-87-2	8260B	15	U	15	1.9	ug/kg	1
Methylene chloride	75-09-2	8260B	15	U	15	8.0	ug/kg	1
Styrene	100-42-5	8260B	15	U	15	3.4	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15	U	15	1.4	ug/kg	1
Tetrachloroethene	127-18-4	8260B	15	U	15	7.1	ug/kg	1
Toluene	108-88-3	8260B	15	U	15	4.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.5	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	15	U	15	3.1	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.6	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	15	U	15	2.4	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB104-08-09-09D**
Date Sampled: **10/09/2009 1630**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-013**
Matrix: **Solid**
% Solids: **77.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0048	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	15	U	15	5.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.6	ug/kg	1
Vinyl chloride	75-01-4	8260B	15	U	15	2.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	15	U	15	8.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		86	85-120
1,2-Dichloroethane-d4		90	53-142
Toluene-d8		103	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MD
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**
Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1344	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ ~~U~~	0.50	0.061	ug/L	1	BSL
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-100909-SB**
Date Sampled: **10/09/2009 1620**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-014**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1344	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		111	70-120
Toluene-d8		113	85-120
Bromofluorobenzene		108	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
1/14/10

15

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0355	MZ		19449
2	5035	8260B	1	10/12/2009 0111	MZ		20352

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	22 UJ	~~U~~	22	2.0	ug/kg	1 SSL
Benzene	71-43-2	8260B	5.5	U	5.5	1.2	ug/kg	1
Bromodichloromethane	75-27-4	8260B	55	U	55	1.2	ug/kg	1
Bromoform	75-25-2	8260B	11	U	11	0.78	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	11	U	11	2.0	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	11	U	11	2.7	ug/kg	1
Carbon disulfide	75-15-0	8260B	5.5	U	5.5	1.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	5.5	U	5.5	2.0	ug/kg	1
Chlorobenzene	108-90-7	8260B	5.5	U	5.5	1.7	ug/kg	1
Chloroethane	75-00-3	8260B	5.5	U	5.5	1.4	ug/kg	1
Chloroform	67-66-3	8260B	5.5	U	5.5	0.92	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	5.5	U	5.5	1.1	ug/kg	1
Cyclohexane	110-82-7	8260B	5.5	U	5.5	0.75	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.5	U	5.5	1.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	5.5	U	5.5	0.70	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.5	U	5.5	0.94	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	5.5 UJ	U	5.5	1.0	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	5.5	U	5.5	1.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	5.5	U	5.5	1.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	5.5	U	5.5	1.8	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	5.5	U	5.5	0.81	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	5.5	U	5.5	1.1	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	5.5	U	5.5	1.9	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	5.5	U	5.5	0.84	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	5.5	U	5.5	1.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	5.5	U	5.5	1.0	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	5.5	U	5.5	0.75	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	5.5	U	5.5	0.91	ug/kg	1
Ethylbenzene	100-41-4	8260B	5.5	U	5.5	1.2	ug/kg	1
2-Hexanone	591-78-6	8260B	11	U	11	1.4	ug/kg	1
Isopropylbenzene	98-82-8	8260B	5.5 UJ	~~U~~	5.5	0.89	ug/kg	1
Methyl acetate	79-20-9	8260B	5.5	U	5.5	0.74	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.5	U	5.5	0.44	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	11	U	11	1.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	5.5	U	5.5	0.68	ug/kg	1
Methylene chloride	75-09-2	8260B	5.5	U	5.5	2.9	ug/kg	1
Styrene	100-42-5	8260B	5.5	U	5.5	1.2	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.5 UJ	~~U~~	5.5	0.52	ug/kg	1
Tetrachloroethene	127-18-4	8260B	5.5	U	5.5	2.6	ug/kg	1
Toluene	108-88-3	8260B	5.5	U	5.5	1.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.5	U	5.5	2.3	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	5.5	U	5.5	1.1	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	5.5	U	5.5	0.94	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
1/14/10

15

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0355	MZ		19449
2	5035	8260B	1	10/12/2009 0111	MZ		20352

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.5 UJ	~~U~~	5.5	0.88	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	5.5	~~U~~	5.5	2.1	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	5.5	~~U~~	5.5	1.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	5.5	~~U~~	5.5	0.95	ug/kg	1
Xylenes (total)	1330-20-7	8260B	5.5	~~U~~	5.5	3.2	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	66	85-120	N	65	85-120
1,2-Dichloroethane-d4		74	53-142		87	53-142
Toluene-d8	N	79	85-115		97	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

15RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0355	MZ		19449
2	5035	8260B	1	10/12/2009 0111	MZ		20352

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	22 UJ	U	22	2.0	ug/kg	2 SSL
Benzene	71-43-2	8260B	5.5	U	5.5	1.2	ug/kg	2
Bromodichloromethane	75-27-4	8260B	55	U	55	1.2	ug/kg	2
Bromoform	75-25-2	8260B	11	U	11	0.77	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	11	U	11	2.0	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	11	U	11	2.6	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.5	U	5.5	1.4	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.5	U	5.5	2.0	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.5	U	5.5	1.6	ug/kg	2
Chloroethane	75-00-3	8260B	5.5	U	5.5	1.4	ug/kg	2
Chloroform	67-66-3	8260B	5.5	U	5.5	0.91	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.5	U	5.5	1.1	ug/kg	2
Cyclohexane	110-82-7	8260B	5.5	U	5.5	0.74	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.5	U	5.5	1.6	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.5	U	5.5	0.69	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.5	U	5.5	0.93	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.5	U	5.5	1.0	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.5	U	5.5	1.4	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.5	U	5.5	1.6	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.5	U	5.5	1.8	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.5	U	5.5	0.80	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.5	U	5.5	1.1	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.5	U	5.5	1.9	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.5	U	5.5	0.83	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.5	U	5.5	1.6	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.5	U	5.5	1.0	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.5	U	5.5	0.75	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.5	U	5.5	0.90	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.5	U	5.5	1.2	ug/kg	2
2-Hexanone	591-78-6	8260B	11	U	11	1.4	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.5	U	5.5	0.88	ug/kg	2
Methyl acetate	79-20-9	8260B	5.5	U	5.5	0.73	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.5	U	5.5	0.44	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	11	U	11	1.6	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.5	U	5.5	0.67	ug/kg	2
Methylene chloride	75-09-2	8260B	5.5	U	5.5	2.9	ug/kg	2
Styrene	100-42-5	8260B	5.5	U	5.5	1.2	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.5	U	5.5	0.52	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.5	U	5.5	2.5	ug/kg	2
Toluene	108-88-3	8260B	5.5	U	5.5	1.5	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.5	U	5.5	2.3	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.5	U	5.5	1.1	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.5	U	5.5	0.93	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/14/10

15RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS101-0-0.5-09D**
Date Sampled: **10/09/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-015**
Matrix: **Solid**
% Solids: **74.5** **10/12/2009 2256**

use orig. Nol

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0355	MZ		19449
2	5035	8260B	1	10/12/2009 0111	MZ		20352

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.5	UJ U	5.5	0.87	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	5.5	U	5.5	2.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.5	U	5.5	1.6	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.5	U	5.5	0.94	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.5	U	5.5	3.2	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	66	85-120	N	65	85-120
1,2-Dichloroethane-d4		74	53-142		87	53-142
Toluene-d8	N	79	85-115		97	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

aw
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1457	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**17**		**17**	**1.5**	**ug/kg**	**2**
Benzene	71-43-2	8260B	4.3	U	4.3	0.94	ug/kg	2
Bromodichloromethane	75-27-4	8260B	43	U	43	0.94	ug/kg	2
Bromoform	75-25-2	8260B	8.5	U	8.5	0.60	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	8.5	U	8.5	1.5	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	8.5	U	8.5	2.0	ug/kg	2
Carbon disulfide	75-15-0	8260B	4.3	U	4.3	1.1	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	4.3	U	4.3	1.5	ug/kg	2
Chlorobenzene	108-90-7	8260B	4.3	U	4.3	1.3	ug/kg	2
Chloroethane	75-00-3	8260B	4.3	U	4.3	1.1	ug/kg	2
Chloroform	67-66-3	8260B	4.3	U	4.3	0.71	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	4.3	U	4.3	0.85	ug/kg	2
Cyclohexane	110-82-7	8260B	4.3	U	4.3	0.57	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.3	U	4.3	1.3	ug/kg	2
Dibromochloromethane	124-48-1	8260B	4.3	U	4.3	0.54	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.3	U	4.3	0.72	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	4.3	U	4.3	0.79	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	4.3	U	4.3	1.1	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	4.3	U	4.3	1.3	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	4.3	U	4.3	1.4	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	4.3	U	4.3	0.62	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	4.3	U	4.3	0.85	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	4.3	U	4.3	1.4	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	4.3	U	4.3	0.65	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	4.3	U	4.3	1.3	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	4.3	U	4.3	0.77	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	4.3	U	4.3	0.58	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	4.3	U	4.3	0.70	ug/kg	2
Ethylbenzene	100-41-4	8260B	4.3	U	4.3	0.94	ug/kg	2
2-Hexanone	591-78-6	8260B	8.5	U	8.5	1.1	ug/kg	2
Isopropylbenzene	98-82-8	8260B	4.3	U	4.3	0.68	ug/kg	2
Methyl acetate	79-20-9	8260B	4.3	U	4.3	0.57	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.3	U	4.3	0.34	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	8.5	U	8.5	1.3	ug/kg	2
Methylcyclohexane	108-87-2	8260B	4.3	U	4.3	0.52	ug/kg	2
Methylene chloride	75-09-2	8260B	4.3	U	4.3	2.2	ug/kg	2
Styrene	100-42-5	8260B	4.3	U	4.3	0.94	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.3	U	4.3	0.40	ug/kg	2
Tetrachloroethene	127-18-4	8260B	4.3	U	4.3	2.0	ug/kg	2
Toluene	108-88-3	8260B	4.3	U	4.3	1.2	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.3	U	4.3	1.8	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	4.3	U	4.3	0.85	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	4.3	U	4.3	0.72	ug/kg	2
1,1,2-Trichloroethane	79-00-5	8260B	4.3	U	4.3	0.67	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
11/4/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB102-07-08-09D**
Date Sampled: **10/09/2009 1200**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-016**
Matrix: **Solid**
% Solids: **83.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1457	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.3	U	4.3	1.6	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	4.3	U	4.3	1.3	ug/kg	2
Vinyl chloride	75-01-4	8260B	4.3	U	4.3	0.73	ug/kg	2
Xylenes (total)	1330-20-7	8260B	4.3	U	4.3	2.5	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		91	85-120
1,2-Dichloroethane-d4		105	53-142
Toluene-d8		103	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/19/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0158	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	19	U	19	1.8	ug/kg	1
Benzene	71-43-2	8260B	4.9	U	4.9	1.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	49	U	49	1.1	ug/kg	1
Bromoform	75-25-2	8260B	9.7	U	9.7	0.68	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.7	U	9.7	1.8	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.7	U	9.7	2.3	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.9	U	4.9	1.3	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.9	U	4.9	1.8	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.9	U	4.9	1.5	ug/kg	1
Chloroethane	75-00-3	8260B	4.9	U	4.9	1.3	ug/kg	1
Chloroform	67-66-3	8260B	4.9	U	4.9	0.81	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.9	U	4.9	0.97	ug/kg	1
Cyclohexane	110-82-7	8260B	4.9	U	4.9	0.66	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.9	U	4.9	1.5	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.9	U	4.9	0.61	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.9	U	4.9	0.83	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.9	U	4.9	0.91	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.9	U	4.9	1.3	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.9	U	4.9	1.5	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.9	U	4.9	1.6	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.9	U	4.9	0.71	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.9	U	4.9	0.97	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.9	U	4.9	1.7	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.9	U	4.9	0.74	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.9	U	4.9	1.5	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.9	U	4.9	0.89	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.9	U	4.9	0.66	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.9	U	4.9	0.80	ug/kg	1
Ethylbenzene	**100-41-4**	**8260B**	**1.1**	**J**	**4.9**	**1.1**	**ug/kg**	**1**
2-Hexanone	591-78-6	8260B	9.7	U	9.7	1.3	ug/kg	1
Isopropylbenzene	**98-82-8**	**8260B**	**2.5**	**J**	**4.9**	**0.78**	**ug/kg**	**1**
Methyl acetate	79-20-9	8260B	4.9	U	4.9	0.65	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.9	U	4.9	0.39	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.7	U	9.7	1.5	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.9	U	4.9	0.59	ug/kg	1
Methylene chloride	75-09-2	8260B	4.9	U	4.9	2.5	ug/kg	1
Styrene	100-42-5	8260B	4.9	U	4.9	1.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.9	U	4.9	0.46	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.9	U	4.9	2.2	ug/kg	1
Toluene	108-88-3	8260B	4.9	U	4.9	1.4	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.9	U	4.9	2.0	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.9	U	4.9	0.97	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.9	U	4.9	0.83	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	4.9	U	4.9	0.77	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS102-0-0.5-09D**
Date Sampled: **10/09/2009 1130**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-017**
Matrix: **Solid**
% Solids: **88.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0158	MZ		19449

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.9	U	4.9	1.9	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.9	U	4.9	1.5	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.9	U	4.9	0.84	ug/kg	1
Xylenes (total)	**1330-20-7**	**8260B**	**9.0**		**4.9**	**2.8**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		88	85-120
1,2-Dichloroethane-d4		82	53-142
Toluene-d8		97	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1520	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	21	U	21	1.8	ug/kg	2
Benzene	71-43-2	8260B	5.1	U	5.1	1.1	ug/kg	2
Bromodichloromethane	75-27-4	8260B	51	U	51	1.1	ug/kg	2
Bromoform	75-25-2	8260B	10	U	10	0.72	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	10	U	10	1.8	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.5	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.1	U	5.1	1.3	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.1	U	5.1	1.8	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.1	U	5.1	1.5	ug/kg	2
Chloroethane	75-00-3	8260B	5.1	U	5.1	1.3	ug/kg	2
Chloroform	67-66-3	8260B	5.1	U	5.1	0.85	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.1	U	5.1	1.0	ug/kg	2
Cyclohexane	110-82-7	8260B	5.1	U	5.1	0.69	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.1	U	5.1	1.5	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.1	U	5.1	0.65	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.1	U	5.1	0.87	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.1	U	5.1	0.96	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.1	U	5.1	1.3	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.1	U	5.1	1.5	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.1	U	5.1	1.6	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.1	U	5.1	0.75	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.1	U	5.1	1.0	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.1	U	5.1	1.7	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.1	U	5.1	0.78	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.1	U	5.1	1.5	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.1	U	5.1	0.93	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.1	U	5.1	0.70	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.1	U	5.1	0.84	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.1	U	5.1	1.1	ug/kg	2
2-Hexanone	591-78-6	8260B	10	U	10	1.3	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.1	U	5.1	0.82	ug/kg	2
Methyl acetate	79-20-9	8260B	5.1	U	5.1	0.69	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.1	U	5.1	0.41	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	10	U	10	1.5	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.1	U	5.1	0.63	ug/kg	2
Methylene chloride	75-09-2	8260B	5.1	U	5.1	2.7	ug/kg	2
Styrene	100-42-5	8260B	5.1	U	5.1	1.1	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.1	U	5.1	0.48	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.1	U	5.1	2.4	ug/kg	2
Toluene	108-88-3	8260B	5.1	U	5.1	1.4	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.1	U	5.1	2.2	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.1	U	5.1	1.0	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.1	U	5.1	0.87	ug/kg	2
1,1,2-Trichloroethane	79-00-5	8260B	5.1	U	5.1	0.81	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

QW
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103-0-0.5-09D**
Date Sampled: **10/09/2009 1215**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-018**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/21/2009 1520	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	5.1	U	5.1	2.0	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.1	U	5.1	1.5	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.1	U	5.1	0.88	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.1	U	5.1	3.0	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		89	85-120
1,2-Dichloroethane-d4		100	53-142
Toluene-d8		102	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
11/4/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0245	MZ		19449
2	5035	8260B	1	10/21/2009 1544	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	19 UJ	U	19	1.7	ug/kg	1 SSL
Benzene	71-43-2	8260B	4.8	U	4.8	1.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	48	U	48	1.1	ug/kg	1
Bromoform	75-25-2	8260B	9.6	U	9.6	0.67	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.6	U	9.6	1.7	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.6	U	9.6	2.3	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.8	U	4.8	1.2	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.8	U	4.8	1.7	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.8	U	4.8	1.4	ug/kg	1
Chloroethane	75-00-3	8260B	4.8	U	4.8	1.2	ug/kg	1
Chloroform	67-66-3	8260B	4.8	U	4.8	0.80	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.8	U	4.8	0.96	ug/kg	1
Cyclohexane	110-82-7	8260B	4.8	U	4.8	0.65	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.8	U	4.8	1.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.8	U	4.8	0.61	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.8	U	4.8	0.82	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.8	U	4.8	0.89	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.8	U	4.8	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.8	U	4.8	1.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.8	U	4.8	1.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.8	U	4.8	0.70	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.8	U	4.8	0.96	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.8	U	4.8	1.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.8	U	4.8	0.73	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.8	U	4.8	1.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.8	U	4.8	0.87	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.8	U	4.8	0.65	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.8	U	4.8	0.79	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.8	U	4.8	1.1	ug/kg	1
2-Hexanone	591-78-6	8260B	9.6	U	9.6	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.8	U	4.8	0.77	ug/kg	1
Methyl acetate	79-20-9	8260B	4.8	U	4.8	0.64	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.8	U	4.8	0.38	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.6	U	9.6	1.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.8	U	4.8	0.59	ug/kg	1
Methylene chloride	75-09-2	8260B	4.8	U	4.8	2.5	ug/kg	1
Styrene	100-42-5	8260B	4.8	U	4.8	1.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.8	U	4.8	0.45	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.8	U	4.8	2.2	ug/kg	1
Toluene	108-88-3	8260B	4.8	U	4.8	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.8	U	4.8	2.0	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.8	U	4.8	0.96	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.8	U	4.8	0.82	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lwj
1/14/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0245	MZ		19449
2	5035	8260B	1	10/21/2009 1544	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.8 W	U	4.8	0.76	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	4.8	U	4.8	1.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.8	U	4.8	1.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.8	U	4.8	0.83	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.8	U	4.8	2.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	81	85-120	N	84	85-120
1,2-Dichloroethane-d4		87	53-142		91	53-142
Toluene-d8		97	85-115		96	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/14/10

19RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0245	MZ		19449
2	5035	8260B	1	10/21/2009 1544	DLB		19991

use orig. val

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	20 UJ	U	20	1.8	ug/kg	2 SSL
Benzene	71-43-2	8260B	5.0	U	5.0	1.1	ug/kg	2
Bromodichloromethane	75-27-4	8260B	50	U	50	1.1	ug/kg	2
Bromoform	75-25-2	8260B	10	U	10	0.71	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	10	U	10	1.8	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.4	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.0	U	5.0	1.3	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.0	U	5.0	1.8	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.0	U	5.0	1.5	ug/kg	2
Chloroethane	75-00-3	8260B	5.0	U	5.0	1.3	ug/kg	2
Chloroform	67-66-3	8260B	5.0	U	5.0	0.84	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.0	U	5.0	1.0	ug/kg	2
Cyclohexane	110-82-7	8260B	5.0	U	5.0	0.68	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.0	U	5.0	1.5	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.0	U	5.0	0.63	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.0	U	5.0	0.86	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.0	U	5.0	0.94	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.0	U	5.0	1.3	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.0	U	5.0	1.5	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.0	U	5.0	1.6	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.0	U	5.0	0.74	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.0	U	5.0	1.0	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.0	U	5.0	1.7	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.0	U	5.0	0.77	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.0	U	5.0	1.5	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.0	U	5.0	0.92	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.0	U	5.0	0.69	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.0	U	5.0	0.83	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.0	U	5.0	1.1	ug/kg	2
2-Hexanone	591-78-6	8260B	10	U	10	1.3	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.0	U	5.0	0.81	ug/kg	2
Methyl acetate	79-20-9	8260B	5.0	U	5.0	0.67	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.0	U	5.0	0.40	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	10	U	10	1.5	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.61	ug/kg	2
Methylene chloride	75-09-2	8260B	5.0	U	5.0	2.6	ug/kg	2
Styrene	100-42-5	8260B	5.0	U	5.0	1.1	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.0	U	5.0	0.47	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.0	U	5.0	2.3	ug/kg	2
Toluene	108-88-3	8260B	5.0	U	5.0	1.4	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.0	U	5.0	2.1	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.0	U	5.0	1.0	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.0	U	5.0	0.86	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

11/14/10

19RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS103D-0-0.5-09D**
Date Sampled: **10/09/2009 1220**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-019**
Matrix: **Solid**
% Solids: **92.3** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0245	MZ		19449
2	5035	8260B	1	10/21/2009 1544	DLB		19991

use mg/Nal

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.0	UJ U	5.0	0.80	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	5.0	U	5.0	1.9	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.0	U	5.0	1.5	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.0	U	5.0	0.87	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.0	U	5.0	2.9	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	81	85-120	N	84	85-120
1,2-Dichloroethane-d4		87	53-142		91	53-142
Toluene-d8		97	85-115		96	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

LW
1/14/10

20

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0308	MZ		19449
2	5035	8260B	1	10/21/2009 1607	DLB		19991

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**9.1** J	J	**17**	**1.8**	**ug/kg**	**1** SSL
Benzene	71-43-2	8260B	4.4 UJ	U	4.4	0.96	ug/kg	1
Bromodichloromethane	75-27-4	8260B	44	U	44	0.96	ug/kg	1
Bromoform	75-25-2	8260B	8.7	U	8.7	0.61	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	8.7	U	8.7	1.6	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	8.7	U	8.7	2.1	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.4	U	4.4	1.1	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.4	U	4.4	1.6	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.4	U	4.4	1.3	ug/kg	1
Chloroethane	75-00-3	8260B	4.4	U	4.4	1.1	ug/kg	1
Chloroform	67-66-3	8260B	4.4	U	4.4	0.72	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.4	U	4.4	0.87	ug/kg	1
Cyclohexane	110-82-7	8260B	4.4	U	4.4	0.59	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.4	U	4.4	1.3	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.4	U	4.4	0.55	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.4	U	4.4	0.74	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.4	U	4.4	0.81	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.4	U	4.4	1.1	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.4	U	4.4	1.3	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.4	U	4.4	1.4	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.4	U	4.4	0.64	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.4	U	4.4	0.87	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.4	U	4.4	1.5	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.4	U	4.4	0.66	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.4	U	4.4	1.3	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.4	U	4.4	0.79	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.4	U	4.4	0.59	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.4	U	4.4	0.71	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.4	U	4.4	0.96	ug/kg	1
2-Hexanone	591-78-6	8260B	8.7	U	8.7	1.1	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.4	U	4.4	0.70	ug/kg	1
Methyl acetate	79-20-9	8260B	4.4	U	4.4	0.58	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.4	U	4.4	0.35	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	8.7	U	8.7	1.3	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.4	U	4.4	0.53	ug/kg	1
Methylene chloride	75-09-2	8260B	4.4	U	4.4	2.3	ug/kg	1
Styrene	100-42-5	8260B	4.4	U	4.4	0.96	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.4	U	4.4	0.41	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.4	U	4.4	2.0	ug/kg	1
Toluene	108-88-3	8260B	4.4	U	4.4	1.2	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.4	U	4.4	1.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.4	U	4.4	0.87	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.4	U	4.4	0.74	ug/kg	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

1/14/10

20

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0308	MZ		19449
2	5035	8260B	1	10/21/2009 1607	DLB		19991

use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.4 UJ	U	4.4	0.69	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	4.4	U	4.4	1.7	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.4	U	4.4	1.3	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.4	U	4.4	0.75	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.4	U	4.4	2.5	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	78	85-120	N	82	85-120
1,2-Dichloroethane-d4		84	53-142		91	53-142
Toluene-d8		98	85-115		96	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
1/14/10

2DRE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB103-08-09-09D**
Date Sampled: **10/09/2009 1255**
Date Received: **10/10/2009**

Laboratory ID: **KJ07039-020**
Matrix: **Solid**
% Solids: **86.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0308	MZ		19449
2	5035	8260B	1	10/21/2009 1607	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**21** J		**21**	**1.9**	**ug/kg**	**2** SSL
Benzene	71-43-2	8260B	5.2 UJ	U	5.2	1.1	ug/kg	2
Bromodichloromethane	75-27-4	8260B	52	U	52	1.1	ug/kg	2
Bromoform	75-25-2	8260B	10	U	10	0.73	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	10	U	10	1.9	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.5	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.2	U	5.2	1.4	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.2	U	5.2	1.9	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.2	U	5.2	1.6	ug/kg	2
Chloroethane	75-00-3	8260B	5.2	U	5.2	1.4	ug/kg	2
Chloroform	67-66-3	8260B	5.2	U	5.2	0.86	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.2	U	5.2	1.0	ug/kg	2
Cyclohexane	110-82-7	8260B	5.2	U	5.2	0.70	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.2	U	5.2	1.6	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.2	U	5.2	0.65	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.2	U	5.2	0.88	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.2	U	5.2	0.97	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.2	U	5.2	1.4	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.2	U	5.2	1.6	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.2	U	5.2	1.7	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.2	U	5.2	0.76	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.2	U	5.2	1.0	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.2	U	5.2	1.8	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.2	U	5.2	0.79	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.2	U	5.2	1.6	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.2	U	5.2	0.95	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.2	U	5.2	0.71	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.2	U	5.2	0.85	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.2	U	5.2	1.1	ug/kg	2
2-Hexanone	591-78-6	8260B	10	U	10	1.4	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.2	U	5.2	0.83	ug/kg	2
Methyl acetate	79-20-9	8260B	5.2	U	5.2	0.70	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.2	U	5.2	0.42	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	10	U	10	1.6	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.2	U	5.2	0.63	ug/kg	2
Methylene chloride	75-09-2	8260B	5.2	U	5.2	2.7	ug/kg	2
Styrene	100-42-5	8260B	5.2	U	5.2	1.1	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.2	U	5.2	0.49	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.2	U	5.2	2.4	ug/kg	2
Toluene	108-88-3	8260B	5.2	U	5.2	1.5	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.2	U	5.2	2.2	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.2	U	5.2	1.0	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.2	U	5.2	0.88	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

pw 1/14/10

20RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ07039-020**
Description: **IR86-SB103-08-09-09D**	Matrix: **Solid**
Date Sampled: **10/09/2009 1255**	% Solids: **86.1** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0308	MZ		19449
2	5035	8260B	1	10/21/2009 1607	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.2 UJ	U	5.2	0.82	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	5.2	U	5.2	2.0	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.2	U	5.2	1.6	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.2	U	5.2	0.89	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.2	U	5.2	3.0	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	78	85-120	N	82	85-120
1,2-Dichloroethane-d4		84	53-142		91	53-142
Toluene-d8		98	85-115		96	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
11/4/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ10006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB107-16-17-09D	KJ10006-005	Soil
2	IR86-SS105-0-0.5-09D	KJ10006-006	Soil
3	IR86-SS106-0-0.5-09D	KJ10006-007	Soil
4	IR86-SB106-07-08-09D	KJ10006-008	Soil
5	IR86-EB01-101009-SB	KJ10006-009	Water
6	IR86-SS107-0-0.5-09D	KJ10006-010	Soil
6MS	IR86-SS107-0-0.5-09DMS	KJ10006-010MS	Soil
6MSD	IR86-SS107-0-0.5-09DMSD	KJ10006-010MSD	Soil
7	IR86-EB01-101109-SB	KJ10006-012	Water
8	IR86-SB107-07-08-09D	KJ10006-013	Soil
9	IR86-SB107D-07-08-09D	KJ10006-014	Soil
10	IR86-SS108-0-0.5-09D	KJ10006-015	Soil
11	IR86-SB108-05-06-09D	KJ10006-016	Soil
12	IR86-SS110-0-0.5-09D	KJ10006-017	Soil
12MS*	IR86-SS110-0-0.5-09DMS	KJ10006-017MS	Soil
12MSD*	IR86-SS110-0-0.5-09DMSD	KJ10006-017MSD	Soil
13	IR86-SS111-0-0.5-09D	KJ10006-018	Soil

** MS/MSD - Mercury only*

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Aluminum	3.1	15.5	None	All >5X
Arsenic	0.0035 mg/L	0.0175 mg/L	None	All ND
Potassium	24	120	None	All >5X
Mercury - KQ19520	0.0062	0.031	U	11, 13
Mercury - KQ19380	0.011	0.055	U	1-4, 6-8
Mercury - KQ19422	0.074 ug/L	0.00037 mg/L	U	5, 7

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101009-SB	None - ND	-	-	-	-
IR86-EB01-101109-SB	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS%R/MSD%R/RPD	Qualifier	Affected Samples
6	Aluminum	79%/Ok/Ok	J/UJ	All Soil Samples
	Antimony	79%/78%/Ok	J/UJ	
	Iron	54%/66%/Ok	J/UJ	
	Manganese	75%/Ok/Ok	J/UJ	

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SB107-07-08-09D mg/kg	IR86-SB107D-07-08-09D mg/kg	RPD	Qualifier
Aluminum	18000	20000	11%	None
Arsenic	0.39	0.53	30%	None

Compound	IR86-SB107-07-08-09D mg/kg	IR86-SB107D-07-08-09D mg/kg	RPD	Qualifier
Barium	26	22	17%	None
Beryllium	0.24 U	0.076	NC	None
Cadmium	0.021	0.025	17%	None
Calcium	89	49	58%	None
Chromium	15	17	13%	None
Cobalt	1.3	1.3	0%	None
Copper	0.42	0.11	117%	J
Iron	4000	6600	49%	None
Lead	7.3	8.0	9%	None
Magnesium	660	660	0%	None
Manganese	19	15	24%	None
Nickel	2.8	2.9	4%	None
Potassium	580	510	13%	None
Selenium	0.28	0.60 U	NC	None
Sodium	55	50	10%	None
Vanadium	21	24	13%	None
Zinc	6.2	6.2	0%	None

Compound Quantitation - Several samples were diluted due to high concentrations of target compounds.

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2325	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**6900** J	~~B~~	**12**	**1.5**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.60 UJ	~~B~~	0.60	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.56**	**J**	**0.60**	**0.23**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**24**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.24	U	0.24	0.034	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.12**		**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**130**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**9.9**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.97**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.1**		**0.30**	**0.058**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**1800** J		**6.0**	**2.0**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**4.1**		**0.60**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**330**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**16** J		**0.90**	**0.070**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**1.7**	**J**	**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**470**	~~B~~	**300**	**13**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.60	U	0.60	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.051	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**40**	**J**	**300**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**8.6**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**5.8**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

2

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2328	KJC	10/16/2009 1435	19455
2	3050B	6010C	1	10/20/2009 1525	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**8300** J	~~B~~	**13**	**1.6**	**mg/kg**	**1** MSL
Antimony	**7440-36-0**	**6010C**	**0.23** J	~~J~~	**0.63**	**0.22**	**mg/kg**	**1** MSL
Arsenic	**7440-38-2**	**6010C**	**0.98**		**0.63**	**0.24**	**mg/kg**	**2**
Barium	**7440-39-3**	**6010C**	**21**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.25	U	0.25	0.035	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.18**		**0.13**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**3400**		**310**	**22**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**11**		**0.31**	**0.064**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.8**		**1.6**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**5.4**		**0.31**	**0.061**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**4500** J		**6.3**	**2.1**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**12**		**0.63**	**0.12**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**360**		**310**	**23**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**26** J		**0.94**	**0.072**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**3.7**		**2.5**	**0.19**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**410**	~~B~~	**310**	**14**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.30**	**J**	**0.63**	**0.22**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.31	U	0.31	0.053	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**60**	**J**	**310**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.1	U	3.1	0.32	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**16**		**3.1**	**0.19**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**19**		**3.1**	**0.43**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/15/10

3

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2331	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**10000** J	~~B~~	**13**	**1.6**	**mg/kg**	**1** MSL
Antimony	**7440-36-0**	**6010C**	**0.30** J	J	**0.63**	**0.22**	**mg/kg**	**1** MSL
Arsenic	**7440-38-2**	**6010C**	**1.2**		**0.63**	**0.24**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**19**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.25	U	0.25	0.035	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.19**		**0.13**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**26000**		**310**	**22**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**11**		**0.31**	**0.064**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.96**	**J**	**1.6**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**2.4**		**0.31**	**0.061**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3900** J		**6.3**	**2.1**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**11**		**0.63**	**0.12**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**980**		**310**	**23**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**29** J		**0.94**	**0.072**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**3.6**		**2.5**	**0.19**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**540**	~~B~~	**310**	**14**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.25**	**J**	**0.63**	**0.22**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.31	U	0.31	0.053	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**94**	**J**	**310**	**22**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.1	U	3.1	0.32	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**17**		**3.1**	**0.19**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**24**		**3.1**	**0.43**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2335	KJC	10/16/2009 1435	19455
2	3050B	6010C	2	10/20/2009 1528	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**38000**	J	**25**	**3.2**	**mg/kg**	**2** MSL
Antimony	7440-36-0	6010C	0.63	UJ	0.63	0.22	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**1.2**	**J**	**1.3**	**0.47**	**mg/kg**	**2**
Barium	**7440-39-3**	**6010C**	**44**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.42**		**0.25**	**0.035**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.041**	**J**	**0.13**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**120**	**J**	**310**	**22**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**41**		**0.31**	**0.064**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**2.1**		**1.6**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**3.2**		**0.63**	**0.12**	**mg/kg**	**2**
Iron	**7439-89-6**	**6010C**	**8300**	J	**6.3**	**2.1**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**15**		**1.3**	**0.23**	**mg/kg**	**2**
Magnesium	**7439-95-4**	**6010C**	**1600**		**310**	**23**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**24**	J	**0.94**	**0.072**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**8.1**		**2.5**	**0.19**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**2200**	~~J~~	**310**	**14**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.84**	**J**	**1.3**	**0.44**	**mg/kg**	**2**
Silver	7440-22-4	6010C	0.31	U	0.31	0.053	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**110**	**J**	**310**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	6.3	U	6.3	0.64	mg/kg	2
Vanadium	**7440-62-2**	**6010C**	**37**		**3.1**	**0.19**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**16**		**3.1**	**0.43**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/5/10

5

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/19/2009 2243	KJC	10/19/2009 1730	19871

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

6

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2338	KJC	10/16/2009 1435	19455
2	3050B	6010C	1	10/20/2009 1531	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**3500** J	~~B~~	**11**	**1.4**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.55 UJ	~~U~~	0.55	0.20	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**2.2**		**0.55**	**0.21**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**24**		**1.4**	**0.10**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.14**	**J**	**0.22**	**0.031**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.48**		**0.11**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**26000**		**280**	**20**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**20**		**0.28**	**0.056**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.1**	**J**	**1.4**	**0.10**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**2.1**		**0.28**	**0.053**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3200** J		**5.5**	**1.8**	**mg/kg**	**2** MSL
Lead	**7439-92-1**	**6010C**	**1.5**		**0.55**	**0.10**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**950**		**280**	**20**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**43** J		**0.83**	**0.064**	**mg/kg**	**2** MSL
Nickel	**7440-02-0**	**6010C**	**4.7**		**2.2**	**0.17**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**900**	~~B~~	**280**	**12**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.49**	**J**	**0.55**	**0.19**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.28	U	0.28	0.046	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**340**		**280**	**19**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.8	U	2.8	0.28	mg/kg	2
Vanadium	**7440-62-2**	**6010C**	**13**		**2.8**	**0.17**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**14**		**2.8**	**0.37**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NLJ
11/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/19/2009 2246	KJC	10/19/2009 1730	19871

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nw
1/15/10

8

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/19/2009 2359	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**18000** J	~~B~~	**12**	**1.5**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.61 UJ	U	0.61	0.22	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.39**	**J**	**0.61**	**0.23**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**26**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.24	U	0.24	0.034	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.021**	**J**	**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**89**	**J**	**300**	**22**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**15**		**0.30**	**0.062**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.3**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.42** J		**0.30**	**0.059**	**mg/kg**	**1** FD
Iron	**7439-89-6**	**6010C**	**4000** J		**6.1**	**2.0**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**7.3**		**0.61**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**660**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**19** J		**0.91**	**0.070**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**2.8**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**580**	~~B~~	**300**	**13**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.28**	**J**	**0.61**	**0.21**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.30	U	0.30	0.051	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**55**	**J**	**300**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**21**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**6.2**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

9

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0002	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**20000** J	~~B~~	**12**	**1.5**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.60 UJ	~~U~~	0.60	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.53**	**J**	**0.60**	**0.23**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**22**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.076**	**J**	**0.24**	**0.034**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.025**	**J**	**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**49**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**17**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.3**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.11** J	~~J~~	**0.30**	**0.058**	**mg/kg**	**1** FD
Iron	**7439-89-6**	**6010C**	**6600** J		**6.0**	**2.0**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**8.0**		**0.60**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**660**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**15** J		**0.90**	**0.069**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**2.9**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**510**	~~B~~	**300**	**13**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.60	U	0.60	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.050	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**50**	**J**	**300**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**24**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**6.2**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0006	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**8700** J	~~B~~	**13**	**1.7**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.65 UJ	~~U~~	0.65	0.23	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.64**	**J**	**0.65**	**0.24**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**19**		**1.7**	**0.12**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.036**	**J**	**0.26**	**0.036**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.40**		**0.13**	**0.014**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**3400**		**320**	**23**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**9.6**		**0.32**	**0.066**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.67**	**J**	**1.7**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**2.4**		**0.32**	**0.063**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2700** J		**6.5**	**2.1**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**11**		**0.65**	**0.12**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**490**		**320**	**24**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**14** J		**0.97**	**0.075**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**2.5**	**J**	**2.6**	**0.19**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**370**	~~B~~	**320**	**14**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.65	U	0.65	0.23	mg/kg	1
Silver	7440-22-4	6010C	0.32	U	0.32	0.054	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**49**	**J**	**320**	**22**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.2	U	3.2	0.33	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**14**		**3.2**	**0.19**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**11**		**3.2**	**0.44**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
1/15/10

11

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0009	KJC	10/16/2009 1435	19455
2	3050B	6010C	1	10/20/2009 1548	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**18000** J	~~B~~	**12**	**1.5**	**mg/kg**	**1** MSL
Antimony	**7440-36-0**	**6010C**	**0.26** J	~~B~~	**0.61**	**0.22**	**mg/kg**	**1** MSL
Arsenic	**7440-38-2**	**6010C**	**1.9**		**0.61**	**0.23**	**mg/kg**	**2**
Barium	**7440-39-3**	**6010C**	**22**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.078**	**J**	**0.24**	**0.034**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.39**		**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**1100**		**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**20**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.4**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**2.6**		**0.30**	**0.059**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**6800** J		**6.1**	**2.0**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**19**		**0.61**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**760**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**15** J		**0.91**	**0.070**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**3.5**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**630**	~~B~~	**300**	**13**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.61	U	0.61	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.051	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**65**	**J**	**300**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**28**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**12**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0012	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**7800** J	~~B~~	**13**	**1.7**	**mg/kg**	**1**	MSL
Antimony	7440-36-0	6010C	0.65 UJ	~~U~~	0.65	0.23	mg/kg	1	MSL
Arsenic	**7440-38-2**	**6010C**	**0.33**	**J**	**0.65**	**0.24**	**mg/kg**	**1**	
Barium	**7440-39-3**	**6010C**	**23**		**1.7**	**0.12**	**mg/kg**	**1**	
Beryllium	7440-41-7	6010C	0.26	U	0.26	0.036	mg/kg	1	
Cadmium	**7440-43-9**	**6010C**	**0.13**		**0.13**	**0.014**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**650**		**320**	**23**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**7.9**		**0.32**	**0.066**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**0.81**	**J**	**1.7**	**0.12**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**2.7**		**0.32**	**0.063**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**2900** J		**6.5**	**2.1**	**mg/kg**	**1**	MSL
Lead	**7439-92-1**	**6010C**	**11**		**0.65**	**0.12**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**280**	**J**	**320**	**24**	**mg/kg**	**1**	
Manganese	**7439-96-5**	**6010C**	**18** J		**0.97**	**0.075**	**mg/kg**	**1**	MSL
Nickel	**7440-02-0**	**6010C**	**2.4**	**J**	**2.6**	**0.19**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**290**	~~B~~J	**320**	**14**	**mg/kg**	**1**	
Selenium	7782-49-2	6010C	0.65	U	0.65	0.23	mg/kg	1	
Silver	7440-22-4	6010C	0.32	U	0.32	0.054	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**43**	**J**	**320**	**22**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	3.2	U	3.2	0.33	mg/kg	1	
Vanadium	**7440-62-2**	**6010C**	**14**		**3.2**	**0.19**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**13**		**3.2**	**0.44**	**mg/kg**	**1**	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

13

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0016	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**14000** J	~~B~~	**12**	**1.5**	**mg/kg**	**1** MSL
Antimony	7440-36-0	6010C	0.58 UJ	~~U~~	0.58	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.65**		**0.58**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**18**		**1.5**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.23	U	0.23	0.032	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.30**		**0.12**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**940**		**290**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**13**		**0.29**	**0.059**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.98**	**J**	**1.5**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.8**		**0.29**	**0.056**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**4200** J		**5.8**	**1.9**	**mg/kg**	**1** MSL
Lead	**7439-92-1**	**6010C**	**9.6**		**0.58**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**510**		**290**	**21**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**11** J		**0.87**	**0.067**	**mg/kg**	**1** MSL
Nickel	**7440-02-0**	**6010C**	**2.4**		**2.3**	**0.17**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**420**	~~B~~	**290**	**13**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	**0.37**	**J**	**0.58**	**0.20**	**mg/kg**	**1**
Silver	7440-22-4	6010C	0.29	U	0.29	0.049	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**63**	**J**	**290**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.9	U	2.9	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**19**		**2.9**	**0.17**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**5.9**		**2.9**	**0.39**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1800	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.045~~ 0.10	~~B~~ U	**0.10**	**0.0071**	**mg/kg**	1 MSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
11/15/10

2

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1804	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.033~~ 0.10	~~Bd~~ U	**0.10**	**0.0074**	**mg/kg**	**1** µBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/15/10

3

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-007**
Description: **IR86-SS106-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/10/2009 0930**	% Solids: **79.6** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1808	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.034**~~ 0.10 U	~~**BJ**~~	**0.10**	**0.0074**	**mg/kg**	**1** MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
1/15/10

4

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-008**
Description: **IR86-SB106-07-08-09D**	Matrix: **Solid**
Date Sampled: **10/10/2009 1015**	% Solids: **79.8** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1817	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Mercury	**7439-97-6**	**7471B**	~~0.035~~ 0.10U	~~B~~	**0.10**	**0.0074**	**mg/kg**	**1**	MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

AW
1/15/10

5

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/13/2009 1513	BNW	10/12/2009 1700	19422

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7470A**	~~0.000076~~ 0.00010 U	~~B~~	**0.00010**	**0.000053**	**mg/L**	**1** MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
11/15/10

6

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1925	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.040**~~ 0.091	~~**BJ**~~ U	**0.091**	**0.0065**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

7

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/13/2009 1518	BNW	10/12/2009 1700	19422

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7470A**	~~0.00014~~ 0.000010U	~~B~~	**0.00010**	**0.000053**	**mg/L**	**1** MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

AW
1/15/10

8

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-013**
Description: **IR86-SB107-07-08-09D**	Matrix: **Solid**
Date Sampled: **10/11/2009 0830**	% Solids: **82.4** **10/12/2009 2256**
Date Received: **10/11/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1821	BNW	10/13/2009 2005	19380

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.032~~ 0.10U	~~B~~	**0.10**	**0.0072**	**mg/kg**	**1** MBL

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
11/15/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1830	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7471B	0.10	U	0.10	0.0071	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1833	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.036**	**J**	**0.11**	**0.0076**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

11

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1835	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.024**~~ 0.104	~~**BJ**~~	**0.10**	**0.0072**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/15/10

12

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1838	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.054**	**BJ**	**0.11**	**0.0077**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

13

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1851	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~**0.024**~~ 0.096U	~~**BJ**~~	**0.096**	**0.0068**	**mg/kg**	**1**

MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

JEW
1/15/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ10006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB100909	KJ10006-001	Water
2	IR86-SB107-16-17-09D	KJ10006-005	Soil
3	IR86-SS105-0-0.5-09D	KJ10006-006	Soil
4	IR86-SS106-0-0.5-09D	KJ10006-007	Soil
5	IR86-SB106-07-08-09D	KJ10006-008	Soil
6	IR86-EB01-101009-SB	KJ10006-009	Water
7	IR86-SS107-0-0.5-09D	KJ10006-010	Soil
7MS	IR86-SS107-0-0.5-09DMS	KJ10006-010MS	Soil
7MSD	IR86-SS107-0-0.5-09DMSD	KJ10006-010MSD	Soil
8	IR86-EB01-101109-SB	KJ10006-012	Water
8MS	IR86-EB01-101109-SBMS	KJ10006-012MS	Water
8MSD	IR86-EB01-101109-SBMSD	KJ10006-012MSD	Water
9	IR86-SB107-07-08-09D	KJ10006-013	Soil
10	IR86-SB107D-07-08-09D	KJ10006-014	Soil
11	IR86-SS108-0-0.5-09D	KJ10006-015	Soil
12	IR86-SB108-05-06-09D	KJ10006-016	Soil
13	IR86-SS110-0-0.5-09D	KJ10006-017	Soil
14	IR86-SS111-0-0.5-09D	KJ10006-018	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
7	Acenaphthene	Ok/Ok/200	None for RPD alone
	Acenaphthylene	Ok/Ok/200	
	Anthracene	165%/Ok/200	None - ND
	Benzo(a)anthracene	448%/Ok/200	J
	Benzo(a)pyrene	341%/Ok/200	
	Benzo(b)fluoranthene	415%/Ok/200	
	Benzo(g,h,i)perylene	210%/Ok/200	
	Benzo(k)fluoranthene	176%/Ok/200	
	Chrysene	394%/Ok/200	
	Dibenzo(a,h)anthracene	Ok/Ok/200	None for RPD alone
	Fluoranthene	824%/137%/200	J
	Fluorene	Ok/Ok/200	None for RPD alone
	Indeno(1,2,3-c,d)pyrene	203%/Ok/200	J
	Naphthalene	26%/Ok/200	J/UJ
	Phenanthrene	368%/Ok/200	J
	Pyrene	596%/Ok/200	
8	Benzo(g,h,i)perylene	Ok/Ok/41	None for RPD alone
	Dibenzo(a,h)anthracene	Ok/Ok/33	
	Indeno(1,2,3-cd)pyrene	Ok/Ok/31	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101009-SB	None - ND	-	-	-	-
IR86-EB01-101109-SB	None - ND	-	-	-	-
IR86-FB100909	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SB107-07-08-09D ug/kg	IR86-SB107D-07-08-09D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-FB100909**
Date Sampled: **10/09/2009 1415**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/19/2009 1251	DC	10/14/2009 2311	19628

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		52	20-150
Fluoranthene-d10		63	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
1/15/10

2

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1233	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.0	U	4.0	0.99	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.0	U	4.0	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.0	U	4.0	0.71	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.0	U	4.0	0.79	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.0	U	4.0	0.78	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.0	U	4.0	0.58	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.0	U	4.0	0.54	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.0	U	4.0	0.50	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.0	U	4.0	0.68	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.0	U	4.0	0.86	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		31	20-150
Fluoranthene-d10		43	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

3

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1303	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.1	U	4.1	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**0.92**	**J**	**4.1**	**0.64**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**8.7**		**4.1**	**0.74**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**12**		**4.1**	**0.82**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**17**		**4.1**	**0.62**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**11**		**4.1**	**0.81**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**7.6**		**4.1**	**0.60**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**11**		**4.1**	**0.56**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.1	U	4.1	0.64	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**15**		**4.1**	**0.52**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.1	U	4.1	0.71	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**8.7**		**4.1**	**1.2**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**4.9**		**4.1**	**0.90**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**14**		**4.1**	**0.62**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		31	20-150
Fluoranthene-d10		38	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

4

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1336	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.1	U	4.1	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**5.3**		**4.1**	**0.64**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**38**		**4.1**	**0.74**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**49**		**4.1**	**0.83**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**73**		**4.1**	**0.63**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**42**		**4.1**	**0.82**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**24**		**4.1**	**0.60**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**48**		**4.1**	**0.57**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.1	U	4.1	0.64	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**73**		**4.1**	**0.53**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.1	U	4.1	0.72	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**37**		**4.1**	**1.3**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**19**		**4.1**	**0.90**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**58**		**4.1**	**0.63**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		49	20-150
Fluoranthene-d10		53	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WJ
11/15/10

5

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1406	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.1	U	4.1	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.1	U	4.1	0.63	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.1	U	4.1	0.73	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.1	U	4.1	0.82	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.1	U	4.1	0.62	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.1	U	4.1	0.81	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.1	U	4.1	0.60	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.1	U	4.1	0.56	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.1	U	4.1	0.63	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.1	U	4.1	0.52	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.1	U	4.1	0.71	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.1	U	4.1	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.1	U	4.1	0.90	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.1	U	4.1	0.62	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		42	20-150
Fluoranthene-d10		55	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

Semivolatile Organic Compounds by GC/MS (SIM)

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/19/2009 1320	DC	10/14/2009 2311	19628

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		54	20-150
Fluoranthene-d10		53	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/5/10

Semivolatile Organic Compounds by GC/MS (SIM)

7

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1435	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	3.6	U	3.6	0.91	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	3.6	U	3.6	1.0	ug/kg	1	
Anthracene	120-12-7	8270D (SIM)	3.6	U	3.6	0.56	ug/kg	1	
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**5.7**	J	**3.6**	**0.65**	**ug/kg**	**1**	MSH
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**5.7**		**3.6**	**0.72**	**ug/kg**	**1**	
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**8.1**		**3.6**	**0.55**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**5.3**		**3.6**	**0.71**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**2.6**		**3.6**	**0.52**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**6.0**		**3.6**	**0.49**	**ug/kg**	**1**	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.6	U	3.6	0.56	ug/kg	1	
Fluoranthene	**206-44-0**	**8270D (SIM)**	**9.7**	J	**3.6**	**0.46**	**ug/kg**	**1**	MSH
Fluorene	86-73-7	8270D (SIM)	3.6	U	3.6	0.62	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**4.4**	J	**3.6**	**1.1**	**ug/kg**	**1**	MSH
Naphthalene	91-20-3	8270D (SIM)	3.6	UJ	3.6	1.1	ug/kg	1	MSL
Phenanthrene	**85-01-8**	**8270D (SIM)**	**4.3**	J	**3.6**	**0.79**	**ug/kg**	**1**	MSH
Pyrene	**129-00-0**	**8270D (SIM)**	**8.8**	J	**3.6**	**0.55**	**ug/kg**	**1**	MSH

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		35	20-150
Fluoranthene-d10		49	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

AW
11/15/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Laboratory ID: **KJ10006-012**
Description: **IR86-EB01-101109-SB**
Matrix: **Aqueous**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/19/2009 1350	DC	10/14/2009 2311	19628

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.067	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.043	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.054	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.033	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.025	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150
Fluoranthene-d10		60	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MJ
1/15/10

9

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/20/2009 1638	DC	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.0	U	4.0	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.0	U	4.0	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.0	U	4.0	0.71	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.0	U	4.0	0.79	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.0	U	4.0	0.78	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.0	U	4.0	0.58	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.0	U	4.0	0.54	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.0	U	4.0	0.50	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.0	U	4.0	0.68	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.0	U	4.0	0.86	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.0	U	4.0	0.60	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		72	20-150
Fluoranthene-d10		95	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

KeD
1/15/10

Semivolatile Organic Compounds by GC/MS (SIM)

10

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/21/2009 1342	GLR	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.99	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.61	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.9	U	3.9	0.70	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.9	U	3.9	0.79	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.78	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.9	U	3.9	0.57	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.9	U	3.9	0.54	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	U	3.9	0.61	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.9	U	3.9	0.50	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.68	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9	U	3.9	1.2	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	3.9	U	3.9	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.9	U	3.9	0.86	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		46	20-150
Fluoranthene-d10		55	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
11/15/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/21/2009 1417	GLR	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.2	U	4.2	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**2.7**	**J**	**4.2**	**0.65**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**30**		**4.2**	**0.76**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**41**		**4.2**	**0.85**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**67**		**4.2**	**0.64**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**39**		**4.2**	**0.83**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**23**		**4.2**	**0.62**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**45**		**4.2**	**0.58**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**8.3**		**4.2**	**0.65**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**65**		**4.2**	**0.54**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.2	U	4.2	0.73	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**33**		**4.2**	**1.3**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**14**		**4.2**	**0.92**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**55**		**4.2**	**0.64**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		33	20-150
Fluoranthene-d10		39	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

12

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/21/2009 1452	GLR	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.0	U	4.0	1.0	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.0	U	4.0	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**1.4**	**J**	**4.0**	**0.71**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**2.2**	**J**	**4.0**	**0.80**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**6.3**		**4.0**	**0.60**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**4.5**		**4.0**	**0.78**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**1.8**	**J**	**4.0**	**0.58**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**3.8**	**J**	**4.0**	**0.54**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.0	U	4.0	0.61	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**2.8**	**J**	**4.0**	**0.51**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.0	U	4.0	0.69	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**3.5**	**J**	**4.0**	**1.2**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.0	U	4.0	1.2	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.0	U	4.0	0.87	ug/kg	1
Pyrene	**129-00-0**	**8270D (SIM)**	**2.6**	**J**	**4.0**	**0.60**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		33	20-150
Fluoranthene-d10		45	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
1/15/10

13

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/21/2009 1527	GLR	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.2	U	4.2	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**1.0**	**J**	**4.2**	**0.65**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**7.6**		**4.2**	**0.76**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**11**		**4.2**	**0.85**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**19**		**4.2**	**0.64**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**11**		**4.2**	**0.83**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**6.6**		**4.2**	**0.62**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**13**		**4.2**	**0.58**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.2	U	4.2	0.65	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**19**		**4.2**	**0.54**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	4.2	U	4.2	0.73	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**9.0**		**4.2**	**1.3**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	4.2	U	4.2	1.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**5.6**		**4.2**	**0.92**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**16**		**4.2**	**0.64**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		27	20-150
Fluoranthene-d10		38	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

14

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/21/2009 1559	GLR	10/19/2009 1947	19885

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.8	U	3.8	0.96	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.8	U	3.8	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.8	U	3.8	0.59	ug/kg	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**1.8**	**J**	**3.8**	**0.68**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**3.5**	**J**	**3.8**	**0.76**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**5.7**		**3.8**	**0.58**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**4.0**		**3.8**	**0.75**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**2.3**	**J**	**3.8**	**0.55**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**3.3**	**J**	**3.8**	**0.52**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.8	U	3.8	0.59	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**4.5**		**3.8**	**0.48**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	3.8	U	3.8	0.66	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**3.3**	**J**	**3.8**	**1.2**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	3.8	U	3.8	1.1	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.8	U	3.8	0.83	ug/kg	1
Pyrene	**129-00-0**	**8270D (SIM)**	**3.8**		**3.8**	**0.58**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150
Fluoranthene-d10		62	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/5/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ10006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB107-16-17-09D	KJ10006-005	Soil
2	IR86-SS105-0-0.5-09D	KJ10006-006	Soil
2MS	IR86-SS105-0-0.5-09DMS	KJ10006-006MS	Soil
2MSD	IR86-SS105-0-0.5-09DMSD	KJ10006-006MSD	Soil
3	IR86-SS106-0-0.5-09D	KJ10006-007	Soil
4	IR86-SB106-07-08-09D	KJ10006-008	Soil
5	IR86-EB01-101009-SB	KJ10006-009	Water
6	IR86-SS107-0-0.5-09D	KJ10006-010	Soil
6MS*	IR86-SS107-0-0.5-09DMS	KJ10006-010MS	Soil
6MSD*	IR86-SS107-0-0.5-09DMSD	KJ10006-010MSD	Soil
7	IR86-EB01-101109-SB	KJ10006-012	Water
8	IR86-SB107-07-08-09D	KJ10006-013	Soil
8RE*	IR86-SB107-07-08-09DRE	KJ10006-013RE	Soil
9	IR86-SB107D-07-08-09D	KJ10006-014	Soil
10	IR86-SS108-0-0.5-09D	KJ10006-015	Soil
11	IR86-SB108-05-06-09D	KJ10006-016	Soil
12	IR86-SS110-0-0.5-09D	KJ10006-017	Soil
13	IR86-SS111-0-0.5-09D	KJ10006-018	Soil
13RE*	IR86-SS111-0-0.5-09DRE	KJ10006-018RE	Soil

* - Pesticide only

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
8RE (Pest)	DCB/TCX	Ok/67%	J/UJ
13 (Pest)	DCB/TCX	Ok/68%	J/UJ
13RE (Pest)	DCB/TCX	Ok/47%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
6	4,4'-DDT	30%/27%/Ok	J/UJ
	Methoxychlor	29%/24%/Ok	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19398	alpha-BHC	57%	J/UJ	8

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101009-SB	None - ND	-	-	-	-
IR86-EB01-101109-SB	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SB107D-07-08-09D ug/kg	IR86-SB107D-07-08-09D ug/kg	RPD	Qualifier
Endosulfan II	4.0 U	0.55	NC	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All results reported with a (P) flag by the laboratory were further qualified as estimated (J).

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 2105	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.41	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.43	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.47	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.36	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.35	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.29	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.0	U	4.0	0.30	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.0	U	4.0	0.38	ug/kg	2
4,4'-DDT	50-29-3	8081B	4.0	U	4.0	0.34	ug/kg	2
Dieldrin	60-57-1	8081B	4.0	U	4.0	0.40	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.41	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.0	U	4.0	0.30	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.0	U	4.0	0.28	ug/kg	2
Endrin	72-20-8	8081B	4.0	U	4.0	0.40	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.0	U	4.0	0.36	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.0	U	4.0	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.47	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		103	55-130
Tetrachloro-m-xylene		82	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

2

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/22/2009 0439	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.43	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.45	ug/kg	2
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.49	ug/kg	2
beta-BHC	**319-85-7**	**8081B**	**28**		**2.1**	**0.38**	**ug/kg**	**2**
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.40	ug/kg	2
alpha-Chlordane	**5103-71-9**	**8081B**	**30**		**2.1**	**0.36**	**ug/kg**	**2**
gamma-Chlordane	**5103-74-2**	**8081B**	**30**	J ~~P~~	**2.1**	**0.30**	**ug/kg**	**2** 2C
4,4'-DDD	**72-54-8**	**8081B**	**14**	J ~~P~~	**4.1**	**0.31**	**ug/kg**	**2** 2C
4,4'-DDE	**72-55-9**	**8081B**	**3.9**	J	**4.1**	**0.40**	**ug/kg**	**2**
4,4'-DDT	**50-29-3**	**8081B**	**5.1**	J ~~P~~	**4.1**	**0.35**	**ug/kg**	**2** 2C
Dieldrin	60-57-1	8081B	4.1	U	4.1	0.41	ug/kg	2
Endosulfan I	**959-98-8**	**8081B**	**34**	J ~~P~~	**2.1**	**0.43**	**ug/kg**	**2** 2C
Endosulfan II	**33213-65-9**	**8081B**	**4.8**	↓ ~~P~~	**4.1**	**0.31**	**ug/kg**	**2** ↓
Endosulfan sulfate	**1031-07-8**	**8081B**	**2.7**	↓ ~~JP~~	**4.1**	**0.29**	**ug/kg**	**2** ↓
Endrin	72-20-8	8081B	4.1	U	4.1	0.41	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.1	U	4.1	0.38	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.1	U	4.1	0.28	ug/kg	2
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.49	ug/kg	2
Heptachlor epoxide	**1024-57-3**	**8081B**	**2.4**		**2.1**	**0.39**	**ug/kg**	**2**
Methoxychlor	72-43-5	8081B	21	U	21	1.7	ug/kg	2
Toxaphene	8001-35-2	8081B	38	U	38	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		74	55-130
Tetrachloro-m-xylene		75	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

3

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/22/2009 1808	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.42	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.45	ug/kg	2
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.49	ug/kg	2
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.37	ug/kg	2
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.40	ug/kg	2
alpha-Chlordane	**5103-71-9**	**8081B**	**0.74**	J ~~JP~~	**2.1**	**0.36**	**ug/kg**	**2** 2C
gamma-Chlordane	**5103-74-2**	**8081B**	**1.1**	~~JP~~	**2.1**	**0.30**	**ug/kg**	**2**
4,4'-DDD	**72-54-8**	**8081B**	**4.2**	~~P~~	**4.1**	**0.31**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**0.89**	**J**	**4.1**	**0.40**	**ug/kg**	**2**
4,4'-DDT	**50-29-3**	**8081B**	**2.1**	J ~~JP~~	**4.1**	**0.35**	**ug/kg**	**2** 2C
Dieldrin	60-57-1	8081B	4.1	U	4.1	0.41	ug/kg	2
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.42	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**3.4**	**J**	**4.1**	**0.31**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	4.1	U	4.1	0.29	ug/kg	2
Endrin	72-20-8	8081B	4.1	U	4.1	0.41	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.1	U	4.1	0.37	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.1	U	4.1	0.27	ug/kg	2
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.49	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.39	ug/kg	2
Methoxychlor	**72-43-5**	**8081B**	**9.5**	J ~~JP~~	**21**	**1.7**	**ug/kg**	**2** 2C
Toxaphene	8001-35-2	8081B	37	U	37	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		81	55-130
Tetrachloro-m-xylene		73	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
11/15/10

4

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 2121	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.42	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.45	ug/kg	2
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.48	ug/kg	2
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.37	ug/kg	2
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.40	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.1	U	2.1	0.36	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.1	U	2.1	0.30	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.1	U	4.1	0.31	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.1	U	4.1	0.40	ug/kg	2
4,4'-DDT	**50-29-3**	**8081B**	**1.7**	J ~~JP~~	**4.1**	**0.35**	**ug/kg**	**2** 2C
Dieldrin	60-57-1	8081B	4.1	U	4.1	0.41	ug/kg	2
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.42	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**4.5**		**4.1**	**0.31**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	4.1	U	4.1	0.29	ug/kg	2
Endrin	72-20-8	8081B	4.1	U	4.1	0.41	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.1	U	4.1	0.37	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.1	U	4.1	0.27	ug/kg	2
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.48	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.38	ug/kg	2
Methoxychlor	72-43-5	8081B	21	U	21	1.7	ug/kg	2
Toxaphene	8001-35-2	8081B	37	U	37	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		99	55-130
Tetrachloro-m-xylene		75	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

5

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/14/2009 2326	ASB	10/13/2009 1812	19511

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0053	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0084	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0053	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		47	30-135
Tetrachloro-m-xylene		91	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

6

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-010**
Description: **IR86-SS107-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/10/2009 1400**	% Solids: **90.8** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/22/2009 0454	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.37	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.39	ug/kg	2
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.43	ug/kg	2
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.33	ug/kg	2
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.35	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.32	ug/kg	2
gamma-Chlordane	**5103-74-2**	**8081B**	**1.8**	J ~~UP~~	**1.9**	**0.26**	**ug/kg**	**2** 2C
4,4'-DDD	72-54-8	8081B	3.6	U	3.6	0.27	ug/kg	2
4,4'-DDE	**72-55-9**	**8081B**	**3.2**	**J**	**3.6**	**0.35**	**ug/kg**	**2**
4,4'-DDT	50-29-3	8081B	3.6	UJ ~~U~~	3.6	0.31	ug/kg	2 MSL
Dieldrin	60-57-1	8081B	3.6	U	3.6	0.36	ug/kg	2
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.37	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.6	U	3.6	0.27	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.6	U	3.6	0.25	ug/kg	2
Endrin	72-20-8	8081B	3.6	U	3.6	0.36	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.6	U	3.6	0.33	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.6	U	3.6	0.24	ug/kg	2
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.43	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.34	ug/kg	2
Methoxychlor	72-43-5	8081B	19	UJ ~~U~~	19	1.5	ug/kg	2 MSL
Toxaphene	8001-35-2	8081B	33	U	33	9.9	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		79	55-130
Tetrachloro-m-xylene		73	70-125

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
1/15/10

7

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/14/2009 2341	ASB	10/13/2009 1812	19511

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		47	30-135
Tetrachloro-m-xylene		96	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MJ
11/15/10

8

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/17/2009 0320	ASB	10/12/2009 1935	19398
2	3550C	8081B	1	10/21/2009 2137	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.41	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.44	ug/kg	1
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.47	ug/kg	1 BSL
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.36	ug/kg	1
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.39	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.1	U	2.1	0.35	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.1	U	2.1	0.29	ug/kg	1
4,4'-DDD	72-54-8	8081B	4.0	U	4.0	0.30	ug/kg	1
4,4'-DDE	72-55-9	8081B	4.0	U	4.0	0.39	ug/kg	1
4,4'-DDT	50-29-3	8081B	4.0	U	4.0	0.34	ug/kg	1
Dieldrin	60-57-1	8081B	4.0	U	4.0	0.40	ug/kg	1
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.41	ug/kg	1
Endosulfan II	33213-65-9	8081B	4.0	U	4.0	0.30	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	4.0	U	4.0	0.28	ug/kg	1
Endrin	72-20-8	8081B	4.0	U	4.0	0.40	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	4.0	U	4.0	0.36	ug/kg	1
Endrin ketone	53494-70-5	8081B	4.0	U	4.0	0.27	ug/kg	1
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.47	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.38	ug/kg	1
Methoxychlor	72-43-5	8081B	21	U	21	1.6	ug/kg	1
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

8

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		104	55-130		99	55-130
Tetrachloro-m-xylene		70	70-125	N	67	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

hw
11/15/10

8RG

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/17/2009 0320	ASB	10/12/2009 1935	19398
2	3550C	8081B	1	10/21/2009 2137	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1 UJ	U	2.1	0.41	ug/kg	2 SSL
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.44	ug/kg	2
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.47	ug/kg	2
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.36	ug/kg	2
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.39	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.1	U	2.1	0.35	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.1	U	2.1	0.29	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.0	U	4.0	0.30	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.0	U	4.0	0.39	ug/kg	2
4,4'-DDT	50-29-3	8081B	4.0	U	4.0	0.34	ug/kg	2
Dieldrin	60-57-1	8081B	4.0	U	4.0	0.40	ug/kg	2
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.41	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.0	U	4.0	0.30	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.0	U	4.0	0.28	ug/kg	2
Endrin	72-20-8	8081B	4.0	U	4.0	0.40	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.0	U	4.0	0.36	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.0	U	4.0	0.27	ug/kg	2
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.47	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.37	ug/kg	2
Methoxychlor	72-43-5	8081B	21	U	21	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		104	55-130		99	55-130
Tetrachloro-m-xylene		70	70-125	N	67	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
11/15/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/21/2009 2152	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.41	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.43	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.47	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.36	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.35	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.29	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.30	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.9	U	3.9	0.38	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.9	U	3.9	0.33	ug/kg	2
Dieldrin	60-57-1	8081B	3.9	U	3.9	0.39	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.41	ug/kg	2
Endosulfan II	**33213-65-9**	**8081B**	**0.55**	**J**	**3.9**	**0.30**	**ug/kg**	**2**
Endosulfan sulfate	1031-07-8	8081B	3.9	U	3.9	0.27	ug/kg	2
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.36	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.47	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	2
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		96	55-130
Tetrachloro-m-xylene		76	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/22/2009 0613	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.2	U	2.2	0.44	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.2	U	2.2	0.47	ug/kg	2
alpha-BHC	319-84-6	8081B	2.2	U	2.2	0.50	ug/kg	2
beta-BHC	319-85-7	8081B	2.2	U	2.2	0.39	ug/kg	2
delta-BHC	319-86-8	8081B	2.2	U	2.2	0.41	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.2	U	2.2	0.37	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.2	U	2.2	0.31	ug/kg	2
4,4'-DDD	**72-54-8**	**8081B**	**0.71**	**J**	**4.3**	**0.32**	**ug/kg**	**2**
4,4'-DDE	**72-55-9**	**8081B**	**1.2**	**J**	**4.3**	**0.41**	**ug/kg**	**2**
4,4'-DDT	50-29-3	8081B	4.3	U	4.3	0.36	ug/kg	2
Dieldrin	60-57-1	8081B	4.3	U	4.3	0.43	ug/kg	2
Endosulfan I	959-98-8	8081B	2.2	U	2.2	0.44	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.3	U	4.3	0.32	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.3	U	4.3	0.30	ug/kg	2
Endrin	72-20-8	8081B	4.3	U	4.3	0.43	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.3	U	4.3	0.39	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.3	U	4.3	0.28	ug/kg	2
Heptachlor	76-44-8	8081B	2.2	U	2.2	0.50	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.2	U	2.2	0.40	ug/kg	2
Methoxychlor	72-43-5	8081B	22	U	22	1.7	ug/kg	2
Toxaphene	8001-35-2	8081B	39	U	39	12	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		80	55-130
Tetrachloro-m-xylene		72	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	3550C	8081B	1	10/22/2009 0628	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.1	U	2.1	0.41	ug/kg	3
gamma-BHC (Lindane)	58-89-9	8081B	2.1	U	2.1	0.44	ug/kg	3
alpha-BHC	319-84-6	8081B	2.1	U	2.1	0.47	ug/kg	3
beta-BHC	319-85-7	8081B	2.1	U	2.1	0.36	ug/kg	3
delta-BHC	319-86-8	8081B	2.1	U	2.1	0.39	ug/kg	3
alpha-Chlordane	5103-71-9	8081B	2.1	U	2.1	0.35	ug/kg	3
gamma-Chlordane	5103-74-2	8081B	2.1	U	2.1	0.29	ug/kg	3
4,4'-DDD	**72-54-8**	**8081B**	**11**		**4.0**	**0.30**	**ug/kg**	**3**
4,4'-DDE	**72-55-9**	**8081B**	**1.2**	**J**	**4.0**	**0.39**	**ug/kg**	**3**
4,4'-DDT	**50-29-3**	**8081B**	**1.2**	**J**	**4.0**	**0.34**	**ug/kg**	**3**
Dieldrin	60-57-1	8081B	4.0	U	4.0	0.40	ug/kg	3
Endosulfan I	959-98-8	8081B	2.1	U	2.1	0.41	ug/kg	3
Endosulfan II	33213-65-9	8081B	4.0	U	4.0	0.30	ug/kg	3
Endosulfan sulfate	**1031-07-8**	**8081B**	**0.92**	**J** ~~JP~~	**4.0**	**0.28**	**ug/kg**	**3** 2C
Endrin	72-20-8	8081B	4.0	U	4.0	0.40	ug/kg	3
Endrin aldehyde	7421-93-4	8081B	4.0	U	4.0	0.36	ug/kg	3
Endrin ketone	53494-70-5	8081B	4.0	U	4.0	0.27	ug/kg	3
Heptachlor	76-44-8	8081B	2.1	U	2.1	0.47	ug/kg	3
Heptachlor epoxide	1024-57-3	8081B	2.1	U	2.1	0.37	ug/kg	3
Methoxychlor	72-43-5	8081B	21	U	21	1.6	ug/kg	3
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	3

Surrogate	Q	Run 3 % Recovery	Acceptance Limits
Decachlorobiphenyl		85	55-130
Tetrachloro-m-xylene		81	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

12

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	3550C	8081B	1	10/22/2009 1824	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	2.2	U	2.2	0.44	ug/kg	3	
gamma-BHC (Lindane)	58-89-9	8081B	2.2	U	2.2	0.46	ug/kg	3	
alpha-BHC	319-84-6	8081B	2.2	U	2.2	0.50	ug/kg	3	
beta-BHC	319-85-7	8081B	2.2	U	2.2	0.38	ug/kg	3	
delta-BHC	319-86-8	8081B	2.2	U	2.2	0.41	ug/kg	3	
alpha-Chlordane	**5103-71-9**	**8081B**	**9.3**	J ~~P~~	**2.2**	**0.37**	**ug/kg**	**3**	2C
gamma-Chlordane	5103-74-2	8081B	2.2	U	2.2	0.31	ug/kg	3	
4,4'-DDD	72-54-8	8081B	4.2	U	4.2	0.32	ug/kg	3	
4,4'-DDE	**72-55-9**	**8081B**	**0.99**	J ~~JP~~	**4.2**	**0.41**	**ug/kg**	**3**	2C
4,4'-DDT	**50-29-3**	**8081B**	**5.8**	J ~~P~~	**4.2**	**0.36**	**ug/kg**	**3**	2C
Dieldrin	60-57-1	8081B	4.2	U	4.2	0.42	ug/kg	3	
Endosulfan I	959-98-8	8081B	2.2	U	2.2	0.44	ug/kg	3	
Endosulfan II	**33213-65-9**	**8081B**	**8.8**	J ~~P~~	**4.2**	**0.32**	**ug/kg**	**3**	2C
Endosulfan sulfate	1031-07-8	8081B	4.2	U	4.2	0.29	ug/kg	3	
Endrin	72-20-8	8081B	4.2	U	4.2	0.42	ug/kg	3	
Endrin aldehyde	7421-93-4	8081B	4.2	U	4.2	0.38	ug/kg	3	
Endrin ketone	53494-70-5	8081B	4.2	U	4.2	0.28	ug/kg	3	
Heptachlor	76-44-8	8081B	2.2	U	2.2	0.50	ug/kg	3	
Heptachlor epoxide	1024-57-3	8081B	2.2	U	2.2	0.40	ug/kg	3	
Methoxychlor	**72-43-5**	**8081B**	**51**	J ~~P~~	**22**	**1.7**	**ug/kg**	**3**	2C
Toxaphene	8001-35-2	8081B	38	U	38	12	ug/kg	3	

Surrogate	Q	Run 3 % Recovery	Acceptance Limits
Decachlorobiphenyl		85	55-130
Tetrachloro-m-xylene		77	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/22/2009 0423	ASB	10/12/2009 1935	19398
2	3550C	8081B	1	10/22/2009 0644	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0 UJ	U	2.0	0.39	ug/kg	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	1
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.45	ug/kg	1
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	1
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.37	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	1
4,4'-DDD	72-54-8	8081B	3.8	U	3.8	0.29	ug/kg	1
4,4'-DDE	**72-55-9**	**8081B**	**0.41** J	**J**	**3.8**	**0.37**	**ug/kg**	**1**
4,4'-DDT	50-29-3	8081B	3.8 UJ	U	3.8	0.32	ug/kg	1
Dieldrin	60-57-1	8081B	3.8	U	3.8	0.38	ug/kg	1
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.39	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.8	U	3.8	0.29	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.8	U	3.8	0.27	ug/kg	1
Endrin	72-20-8	8081B	3.8	U	3.8	0.38	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.8	U	3.8	0.35	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.8	U	3.8	0.26	ug/kg	1
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.45	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	1
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	1
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		77	55-130		81	55-130
Tetrachloro-m-xylene	N	68	70-125	N	47	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
11/15/10

13RE

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/22/2009 0423	ASB	10/12/2009 1935	19398
2	3550C	8081B	1	10/22/2009 0644	ASB	10/19/2009 1543	19861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0 UJ	U	2.0	0.39	ug/kg	2 SSL
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.41	ug/kg	2
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.45	ug/kg	2
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	2
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.37	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.33	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	2
4,4'-DDD	72-54-8	8081B	3.8	U	3.8	0.29	ug/kg	2
4,4'-DDE	72-55-9	8081B	3.8	U	3.8	0.37	ug/kg	2
4,4'-DDT	50-29-3	8081B	3.8	U	3.8	0.32	ug/kg	2
Dieldrin	60-57-1	8081B	3.8	U	3.8	0.38	ug/kg	2
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.39	ug/kg	2
Endosulfan II	33213-65-9	8081B	3.8	U	3.8	0.29	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	3.8	U	3.8	0.26	ug/kg	2
Endrin	72-20-8	8081B	3.8	U	3.8	0.38	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	3.8	U	3.8	0.35	ug/kg	2
Endrin ketone	53494-70-5	8081B	3.8	U	3.8	0.25	ug/kg	2
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.45	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	2
Methoxychlor	72-43-5	8081B	20	U	20	1.5	ug/kg	2
Toxaphene	8001-35-2	8081B	35	U	35	10	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		77	55-130		81	55-130
Tetrachloro-m-xylene	N	68	70-125	N	47	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/23/2009 1802	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	40	U	40	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	80	U	80	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	40	U	40	4.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	40	U	40	2.8	ug/kg	1
Aroclor 1248	12672-29-6	8082A	40	U	40	4.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	40	U	40	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	40	U	40	6.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		102	60-125
Tetrachloro-m-xylene		102	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
1/15/10

2

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1803	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	41	U	41	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	83	U	83	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	41	U	41	4.1	ug/kg	1
Aroclor 1242	53469-21-9	8082A	41	U	41	2.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	41	U	41	4.7	ug/kg	1
Aroclor 1254	11097-69-1	8082A	41	U	41	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	41	U	41	7.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		99	60-125
Tetrachloro-m-xylene		88	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

3

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1816	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	41	U	41	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	84	U	84	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	41	U	41	4.1	ug/kg	1
Aroclor 1242	53469-21-9	8082A	41	U	41	2.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	41	U	41	4.7	ug/kg	1
Aroclor 1254	11097-69-1	8082A	41	U	41	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	41	U	41	7.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		98	60-125
Tetrachloro-m-xylene		96	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

4

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1841	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	41	U	41	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	83	U	83	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	41	U	41	4.1	ug/kg	1
Aroclor 1242	53469-21-9	8082A	41	U	41	2.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	41	U	41	4.7	ug/kg	1
Aroclor 1254	11097-69-1	8082A	41	U	41	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	41	U	41	7.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		96	60-125
Tetrachloro-m-xylene		93	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
1/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**
Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/15/2009 2026	NCM	10/13/2009 1812	19513

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.053	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.53	U	0.53	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.53	U	0.53	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		57	40-135
Tetrachloro-m-xylene		102	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/5/10

6

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1854	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	36	U	36	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	73	U	73	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	36	U	36	3.6	ug/kg	1
Aroclor 1242	53469-21-9	8082A	36	U	36	2.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	36	U	36	4.2	ug/kg	1
Aroclor 1254	11097-69-1	8082A	36	U	36	2.0	ug/kg	1
Aroclor 1260	11096-82-5	8082A	36	U	36	6.2	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		98	60-125
Tetrachloro-m-xylene		95	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
11/15/10

TCL Aroclors

7

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/15/2009 2038	NCM	10/13/2009 1812	19513

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		57	40-135
Tetrachloro-m-xylene		108	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

KW
11/5/10

TCL Aroclors

8

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1932	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	40	U	40	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	81	U	81	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	40	U	40	4.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	40	U	40	2.8	ug/kg	1
Aroclor 1248	12672-29-6	8082A	40	U	40	4.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	40	U	40	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	40	U	40	6.9	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
1/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-013**
Description: **IR86-SB107-07-08-09D**	Matrix: **Solid**
Date Sampled: **10/11/2009 0830**	% Solids: **82.4** **10/12/2009 2256**
Date Received: **10/11/2009**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		102	60-125
Tetrachloro-m-xylene		81	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
1/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1944	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	80	U	80	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		101	60-125
Tetrachloro-m-xylene		90	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
4/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 1957	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	42	U	42	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	86	U	86	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	42	U	42	4.2	ug/kg	1
Aroclor 1242	53469-21-9	8082A	42	U	42	3.0	ug/kg	1
Aroclor 1248	12672-29-6	8082A	42	U	42	4.9	ug/kg	1
Aroclor 1254	11097-69-1	8082A	42	U	42	2.3	ug/kg	1
Aroclor 1260	11096-82-5	8082A	42	U	42	7.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		114	60-125
Tetrachloro-m-xylene		102	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

11

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2010	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	40	U	40	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	81	U	81	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	40	U	40	4.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	40	U	40	2.8	ug/kg	1
Aroclor 1248	12672-29-6	8082A	40	U	40	4.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	40	U	40	2.2	ug/kg	1
Aroclor 1260	11096-82-5	8082A	40	U	40	6.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		109	60-125
Tetrachloro-m-xylene		99	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

hw
11/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2022	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	43	U	43	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	86	U	86	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	43	U	43	4.3	ug/kg	1
Aroclor 1242	53469-21-9	8082A	43	U	43	3.0	ug/kg	1
Aroclor 1248	12672-29-6	8082A	43	U	43	4.9	ug/kg	1
Aroclor 1254	11097-69-1	8082A	43	U	43	2.3	ug/kg	1
Aroclor 1260	11096-82-5	8082A	43	U	43	7.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		98	60-125
Tetrachloro-m-xylene		86	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

KW
1/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2035	NCM	10/12/2009 1935	19399

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	38	U	38	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	78	U	78	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	38	U	38	3.8	ug/kg	1
Aroclor 1242	53469-21-9	8082A	38	U	38	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	38	U	38	4.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	38	U	38	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	38	U	38	6.6	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
11/5/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		99	60-125
Tetrachloro-m-xylene		86	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
1/15/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ10006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB100909	KJ10006-001	Water
2	IR86-SB107-16-17-09D	KJ10006-005	Soil
3	IR86-SS105-0-0.5-09D	KJ10006-006	Soil
4	IR86-SS106-0-0.5-09D	KJ10006-007	Soil
5	IR86-SB106-07-08-09D	KJ10006-008	Soil
6	IR86-EB01-101009-SB	KJ10006-009	Water
6MS	IR86-EB01-101009-SBMS	KJ10006-009MS	Water
6MSD	IR86-EB01-101009-SBMSD	KJ10006-009MSD	Water
7	IR86-SS107-0-0.5-09D	KJ10006-010	Soil
7MS	IR86-SS107-0-0.5-09DMS	KJ10006-010MS	Soil
7MSD	IR86-SS107-0-0.5-09DMSD	KJ10006-010MSD	Soil
8	IR86-EB01-101109-SB	KJ10006-012	Water
9	IR86-SB107-07-08-09D	KJ10006-013	Soil
10	IR86-SB107D-07-08-09D	KJ10006-014	Soil
11	IR86-SS108-0-0.5-09D	KJ10006-015	Soil
12	IR86-SB108-05-06-09D	KJ10006-016	Soil
13	IR86-SS110-0-0.5-09D	KJ10006-017	Soil
14	IR86-SS111-0-0.5-09D	KJ10006-018	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/21/09	4-Chloroaniline	31.37%	J/UJ	1, 6, 8
10/22/09	Acetophenone	99.51%/0.008 RRF	J/R	4
	4-Chloroaniline	33.82%	J/UJ	
	1,1'-Biphenyl	99.11%/0.015 RRF	J/R	
	Caprolactam	113.62%	J/UJ	

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
2	2-Fluorobiphenyl	40%	None for one out
3	Nitrobenzene-d5	31%	J/UJ
	2-Fluorobiphenyl	35%	
	2-Fluorophenol	30%	
	Phenol-d5	34%	
7	2-Fluorobiphenyl	44%	None for one out per fraction
	2,4,6-Tribromophenol	29%	
11	2-Fluorobiphenyl	40%	None for one out
12	2-Fluorobiphenyl	43%	None for one out
13	Nitrobenzene-d5	31%	J/UJ
	2-Fluorobiphenyl	31%	
	2-Fluorophenol	28%	
	2,4,6-Tribromophenol	31%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
7	4,6-Dinitro-2-methylphenol	8.2%/12%/Ok	J/R
	2,4-Dinitrophenol	5.4%/6.2%/Ok	
	Hexachlorocyclopentadiene	4.9%/7.4%/41	
	Hexachloroethane	29%/Ok/Ok	J/UJ
	2-Nitrophenol	22%/28%/Ok	
	Pentachlorophenol	8.9%/3.8%/82	J/R
	2,4,6-Trichlorophenol	24%/24%/Ok	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/kg	Action Level ug/kg	Qualifier	Affected Samples
KQ19886	Di-n-butylphthalate	71	710	None	All ND

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-FB100909	bis(2-Ethylhexyl)phthalate	0.33	110	U	4, 11, 14
IR86-EB01-101009-SB	bis(2-Ethylhexyl)phthalate	0.43	143	None	See FB
IR86-EB01-101109-SB	bis(2-Ethylhexyl)phthalate	0.54	180	None	See FB
IR86-FB01-101309	Caprolactam	3.3	550	None	All ND

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SB107-07-08-09D ug/kg	IR86-SB107D-07-08-09D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB100909**
Date Sampled: **10/09/2009 1415**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2102	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	UJ ~~U~~	5.2	0.23	ug/L	1 CCU
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.062	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**0.33**	**J**	**5.2**	**0.11**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB100909**
Date Sampled: **10/09/2009 1415**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2102	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	40-110
2-Fluorobiphenyl		56	50-110
Terphenyl-d14		60	50-135
2-Fluorophenol		51	20-110
Phenol-d5		50	10-115
2,4,6-Tribromophenol		75	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

2

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0333	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	22	ug/kg	1
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	26	ug/kg	1
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	1
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	300	U	300	8.1	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	40	U	40	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	400	U	400	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	300	U	300	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	1
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	8.9	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	300	U	300	7.2	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	80	U	80	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	300	U	300	28	ug/kg	1
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	1
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	1
Nitrobenzene	98-95-3	8270D	300	U	300	6.5	ug/kg	1
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	360	U	360	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

2

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0333	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	1
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		37	35-100
2-Fluorobiphenyl	N	40	45-105
Terphenyl-d14		42	30-125
2-Fluorophenol		39	35-105
Phenol-d5		41	40-100
2,4,6-Tribromophenol		54	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0353	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	310 UJ	U	310	22	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	310	U	310	21	ug/kg	1
Benzaldehyde	100-52-7	8270D	310	U	310	21	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	310	U	310	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	310	U	310	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	310	U	310	27	ug/kg	1
Caprolactam	105-60-2	8270D	310	U	310	21	ug/kg	1
Carbazole	86-74-8	8270D	310	U	310	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	310	U	310	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	310	U	310	8.5	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	310	U	310	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	41	U	41	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	310	U	310	14	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	310	U	310	14	ug/kg	1
2-Chlorophenol	95-57-8	8270D	310	U	310	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	310	U	310	14	ug/kg	1
Dibenzofuran	132-64-9	8270D	310	U	310	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	310	U	310	45	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	310	U	310	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	310	U	310	14	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	310	U	310	14	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	310	U	310	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	310	U	310	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	490	U	490	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	410	U	410	140	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	310	U	310	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	310	U	310	21	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	310	U	310	40	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	310	U	310	15	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	310	U	310	19	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	310	U	310	14	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	310	U	310	30	ug/kg	1
Hexachloroethane	67-72-1	8270D	310	U	310	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	9.2	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	310	U	310	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	310	U	310	7.5	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	83	U	83	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	310	U	310	29	ug/kg	1
3-Nitroaniline	99-09-2	8270D	310	U	310	49	ug/kg	1
4-Nitroaniline	100-01-6	8270D	310	U	310	24	ug/kg	1
Nitrobenzene	98-95-3	8270D	310	U	310	6.7	ug/kg	1
2-Nitrophenol	88-75-5	8270D	310	U	310	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	370	U	370	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	310	U	310	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0353	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	310 UJ	U	310	11	ug/kg	1 SSL
Pentachlorophenol	87-86-5	8270D	520	U	520	170	ug/kg	1
Phenol	108-95-2	8270D	310	U	310	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	310	U	310	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	310	U	310	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	31	35-100
2-Fluorobiphenyl	N	35	45-105
Terphenyl-d14		37	30-125
2-Fluorophenol	N	30	35-105
Phenol-d5	N	34	40-100
2,4,6-Tribromophenol		45	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

4

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/23/2009 0257	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	310 R	~~U~~	310	23	ug/kg	1 CC
Atrazine	1912-24-9	8270D	310	U	310	21	ug/kg	1
Benzaldehyde	100-52-7	8270D	310	U	310	21	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	8300 R	~~U~~	8300	330	ug/kg	1 CC
4-Bromophenyl phenyl ether	101-55-3	8270D	310	U	310	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	310	U	310	28	ug/kg	1
Caprolactam	105-60-2	8270D	310 UJ	~~U~~	310	21	ug/kg	1 CCH
Carbazole	86-74-8	8270D	310	U	310	18	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	310	U	310	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	310 UJ	~~U~~	310	8.5	ug/kg	1 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	310	U	310	13	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	41	U	41	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	310	U	310	14	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	310	U	310	14	ug/kg	1
2-Chlorophenol	95-57-8	8270D	310	U	310	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	310	U	310	14	ug/kg	1
Dibenzofuran	132-64-9	8270D	310	U	310	13	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	310	U	310	45	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	310	U	310	13	ug/kg	1
Diethylphthalate	84-66-2	8270D	310	U	310	14	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	310	U	310	14	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	310	U	310	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	310	U	310	23	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	490	U	490	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	410	U	410	140	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	310	U	310	23	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	310	U	310	21	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	310	U	310	40	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	310 ~~U~~	~~U~~	**310**	**15**	**ug/kg**	**1** FBL
Hexachlorobenzene	118-74-1	8270D	310	U	310	19	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	310	U	310	14	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	310	U	310	30	ug/kg	1
Hexachloroethane	67-72-1	8270D	310	U	310	11	ug/kg	1
Isophorone	78-59-1	8270D	230	U	230	9.3	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	310	U	310	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	310	U	310	7.5	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	84	U	84	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	310	U	310	29	ug/kg	1
3-Nitroaniline	99-09-2	8270D	310	U	310	49	ug/kg	1
4-Nitroaniline	100-01-6	8270D	310	U	310	24	ug/kg	1
Nitrobenzene	98-95-3	8270D	310	U	310	6.8	ug/kg	1
2-Nitrophenol	88-75-5	8270D	310	U	310	23	ug/kg	1
4-Nitrophenol	100-02-7	8270D	380	U	380	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	310	U	310	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

4

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/23/2009 0257	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	310	U	310	11	ug/kg	1
Pentachlorophenol	87-86-5	8270D	530	U	530	180	ug/kg	1
Phenol	108-95-2	8270D	310	U	310	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	310	U	310	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	310	U	310	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	35-100
2-Fluorobiphenyl		61	45-105
Terphenyl-d14		62	30-125
2-Fluorophenol		62	35-105
Phenol-d5		62	40-100
2,4,6-Tribromophenol		69	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

5

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0413	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	310	U	310	22	ug/kg	1
Atrazine	1912-24-9	8270D	310	U	310	21	ug/kg	1
Benzaldehyde	100-52-7	8270D	310	U	310	21	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	310	U	310	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	310	U	310	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	310	U	310	27	ug/kg	1
Caprolactam	105-60-2	8270D	310	U	310	21	ug/kg	1
Carbazole	86-74-8	8270D	310	U	310	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	310	U	310	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	310	U	310	8.5	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	310	U	310	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	41	U	41	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	310	U	310	14	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	310	U	310	14	ug/kg	1
2-Chlorophenol	95-57-8	8270D	310	U	310	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	310	U	310	14	ug/kg	1
Dibenzofuran	132-64-9	8270D	310	U	310	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	310	U	310	45	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	310	U	310	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	310	U	310	14	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	310	U	310	14	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	310	U	310	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	310	U	310	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	490	U	490	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	410	U	410	140	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	310	U	310	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	310	U	310	21	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	310	U	310	40	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	310	U	310	15	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	310	U	310	19	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	310	U	310	14	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	310	U	310	30	ug/kg	1
Hexachloroethane	67-72-1	8270D	310	U	310	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	9.2	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	310	U	310	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	310	U	310	7.5	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	83	U	83	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	310	U	310	29	ug/kg	1
3-Nitroaniline	99-09-2	8270D	310	U	310	49	ug/kg	1
4-Nitroaniline	100-01-6	8270D	310	U	310	24	ug/kg	1
Nitrobenzene	98-95-3	8270D	310	U	310	6.7	ug/kg	1
2-Nitrophenol	88-75-5	8270D	310	U	310	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	370	U	370	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	310	U	310	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
11/15/10

5

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0413	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	310	U	310	11	ug/kg	1
Pentachlorophenol	87-86-5	8270D	520	U	520	170	ug/kg	1
Phenol	108-95-2	8270D	310	U	310	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	310	U	310	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	310	U	310	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	35-100
2-Fluorobiphenyl		52	45-105
Terphenyl-d14		53	30-125
2-Fluorophenol		53	35-105
Phenol-d5		55	40-100
2,4,6-Tribromophenol		65	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/5/10

6

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2121	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.094	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	UJ ~~U~~	5.2	0.23	ug/L	1 CEH
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.093	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**0.43**	**J**	**5.2**	**0.11**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
11/15/10

Semivolatile Organic Compounds by GC/MS

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2121	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	40-110
2-Fluorobiphenyl		59	50-110
Terphenyl-d14		55	50-135
2-Fluorophenol		50	20-110
Phenol-d5		54	10-115
2,4,6-Tribromophenol		69	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

NW
11/5/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0433	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	270	U	270	20	ug/kg	1	
Atrazine	1912-24-9	8270D	270	U	270	19	ug/kg	1	
Benzaldehyde	100-52-7	8270D	270	U	270	19	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	270	U	270	11	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	270	U	270	11	ug/kg	1	
Butyl benzyl phthalate	85-68-7	8270D	270	U	270	24	ug/kg	1	
Caprolactam	105-60-2	8270D	270	U	270	19	ug/kg	1	
Carbazole	86-74-8	8270D	270	U	270	15	ug/kg	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	270	U	270	9.2	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	270	U	270	7.4	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	270	U	270	11	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	36	U	36	10	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	270	U	270	12	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	270	U	270	12	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	270	U	270	10	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	270	U	270	12	ug/kg	1	
Dibenzofuran	132-64-9	8270D	270	U	270	11	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	270	U	270	39	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	270	U	270	11	ug/kg	1	
Diethylphthalate	84-66-2	8270D	270	U	270	12	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	270	U	270	12	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	270	U	270	13	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	270	U	270	20	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	430	R ~~U~~	430	140	ug/kg	1	MSL
2,4-Dinitrophenol	51-28-5	8270D	360	R ~~U~~	360	120	ug/kg	1	↓
2,4-Dinitrotoluene	121-14-2	8270D	270	U	270	20	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	270	U	270	19	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	270	U	270	35	ug/kg	1	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	270	U	270	13	ug/kg	1	
Hexachlorobenzene	118-74-1	8270D	270	U	270	16	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	270	U	270	12	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	270	R ~~U~~	270	26	ug/kg	1	MSL
Hexachloroethane	67-72-1	8270D	270	UJ ~~U~~	270	9.7	ug/kg	1	MSL
Isophorone	78-59-1	8270D	200	U	200	8.1	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	270	U	270	11	ug/kg	1	
2-Methylphenol	95-48-7	8270D	270	U	270	6.6	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	73	U	73	13	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	270	U	270	25	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	270	U	270	43	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	270	U	270	21	ug/kg	1	
Nitrobenzene	98-95-3	8270D	270	U	270	5.9	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	270	UJ ~~U~~	270	20	ug/kg	1	MSL
4-Nitrophenol	100-02-7	8270D	330	U	330	100	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	270	U	270	14	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

11/15/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0433	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	270	U	270	9.4	ug/kg	1
Pentachlorophenol	87-86-5	8270D	460	R ~~U~~	460	150	ug/kg	1 MSL
Phenol	108-95-2	8270D	270	U	270	9.8	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	270	U	270	10	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	270	UJ ~~U~~	270	11	ug/kg	1 MSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		44	35-100
2-Fluorobiphenyl	N	44	45-105
Terphenyl-d14		52	30-125
2-Fluorophenol		38	35-105
Phenol-d5		44	40-100
2,4,6-Tribromophenol	N	29	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
1/15/10

8

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**
Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2220	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.35	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.4	U	5.4	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.098	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.065	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.4	UJ ~~U~~	5.4	0.24	ug/L	1 CCH
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.4	U	5.4	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.25	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.4	U	5.4	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.4	U	5.4	0.63	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.23	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.4	U	5.4	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.42	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.4	U	5.4	0.065	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.63	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.4	U	5.4	0.47	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.27	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.41	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.097	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**0.54**	**J**	**5.4**	**0.12**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.25	ug/L	1
Hexachloroethane	67-72-1	8270D	5.4	U	5.4	0.24	ug/L	1
Isophorone	78-59-1	8270D	5.4	U	5.4	0.23	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.33	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.70	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.36	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.25	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.27	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.42	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.4	U	5.4	0.46	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.4	U	5.4	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

8

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	10/21/2009 2220	DC	10/14/2009 2311	19627

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.4	U	5.4	0.26	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.4	U	5.4	0.62	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.4	U	5.4	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	40-110
2-Fluorobiphenyl		58	50-110
Terphenyl-d14		57	50-135
2-Fluorophenol		51	20-110
Phenol-d5		54	10-115
2,4,6-Tribromophenol		69	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hew
11/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0911	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	22	ug/kg	1
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	26	ug/kg	1
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	1
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	300	U	300	8.2	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	40	U	40	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	400	U	400	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	300	U	300	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	1
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	8.9	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	300	U	300	7.2	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	80	U	80	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	300	U	300	28	ug/kg	1
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	1
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	1
Nitrobenzene	98-95-3	8270D	300	U	300	6.5	ug/kg	1
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	360	U	360	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0911	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	1
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		49	35-100
2-Fluorobiphenyl		49	45-105
Terphenyl-d14		55	30-125
2-Fluorophenol		48	35-105
Phenol-d5		46	40-100
2,4,6-Tribromophenol		68	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
11/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0553	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	21	ug/kg	1
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	26	ug/kg	1
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	1
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	300	U	300	8.1	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	21	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	21	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	300	U	300	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	1
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	1
Isophorone	78-59-1	8270D	210	U	210	8.8	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	300	U	300	7.2	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	80	U	80	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	300	U	300	27	ug/kg	1
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	1
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	1
Nitrobenzene	98-95-3	8270D	300	U	300	6.4	ug/kg	1
2-Nitrophenol	88-75-5	8270D	300	U	300	21	ug/kg	1
4-Nitrophenol	100-02-7	8270D	360	U	360	110	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hew
1/15/10

10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	10/31/2009 0553	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	500	U	500	170	ug/kg	1
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		50	35-100
2-Fluorobiphenyl		49	45-105
Terphenyl-d14		51	30-125
2-Fluorophenol		47	35-105
Phenol-d5		48	40-100
2,4,6-Tribromophenol		55	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
11/5/10

11

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0931	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	320	U	320	23	ug/kg	1
Atrazine	1912-24-9	8270D	320	U	320	22	ug/kg	1
Benzaldehyde	100-52-7	8270D	320	U	320	22	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	320	U	320	13	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	320	U	320	13	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	320	U	320	28	ug/kg	1
Caprolactam	105-60-2	8270D	320	U	320	22	ug/kg	1
Carbazole	86-74-8	8270D	320	U	320	18	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	320	U	320	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	320	U	320	8.7	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	320	U	320	13	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	42	U	42	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	320	U	320	14	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	320	U	320	14	ug/kg	1
2-Chlorophenol	95-57-8	8270D	320	U	320	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	320	U	320	14	ug/kg	1
Dibenzofuran	132-64-9	8270D	320	U	320	13	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	320	U	320	46	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	320	U	320	13	ug/kg	1
Diethylphthalate	84-66-2	8270D	320	U	320	14	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	320	U	320	14	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	320	U	320	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	320	U	320	23	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	500	U	500	170	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	420	U	420	140	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	320	U	320	23	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	320	U	320	22	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	320	U	320	41	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	320 ~~60~~	U ~~J~~	**320**	**15**	**ug/kg**	**1** FBL
Hexachlorobenzene	118-74-1	8270D	320	U	320	19	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	320	U	320	14	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	320	U	320	31	ug/kg	1
Hexachloroethane	67-72-1	8270D	320	U	320	11	ug/kg	1
Isophorone	78-59-1	8270D	230	U	230	9.5	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	320	U	320	13	ug/kg	1
2-Methylphenol	95-48-7	8270D	320	U	320	7.7	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	86	U	86	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	320	U	320	30	ug/kg	1
3-Nitroaniline	99-09-2	8270D	320	U	320	50	ug/kg	1
4-Nitroaniline	100-01-6	8270D	320	U	320	24	ug/kg	1
Nitrobenzene	98-95-3	8270D	320	U	320	6.9	ug/kg	1
2-Nitrophenol	88-75-5	8270D	320	U	320	23	ug/kg	1
4-Nitrophenol	100-02-7	8270D	390	U	390	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	320	U	320	17	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NEO
11/15/10

11

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0931	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	320	U	320	11	ug/kg	1
Pentachlorophenol	87-86-5	8270D	540	U	540	180	ug/kg	1
Phenol	108-95-2	8270D	320	U	320	12	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	320	U	320	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	320	U	320	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		38	35-100
2-Fluorobiphenyl	N	40	45-105
Terphenyl-d14		41	30-125
2-Fluorophenol		38	35-105
Phenol-d5		41	40-100
2,4,6-Tribromophenol		54	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MeJ
1/15/10

12

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0951	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	300	U	300	22	ug/kg	1
Atrazine	1912-24-9	8270D	300	U	300	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	300	U	300	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	300	U	300	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	300	U	300	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	300	U	300	27	ug/kg	1
Caprolactam	105-60-2	8270D	300	U	300	20	ug/kg	1
Carbazole	86-74-8	8270D	300	U	300	17	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	300	U	300	10	ug/kg	1
4-Chloroaniline	106-47-8	8270D	300	U	300	8.2	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	300	U	300	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	40	U	40	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	300	U	300	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	300	U	300	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	300	U	300	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	300	U	300	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	300	U	300	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	300	U	300	43	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	300	U	300	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	300	U	300	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	300	U	300	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	300	U	300	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	300	U	300	22	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	400	U	400	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	300	U	300	22	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	300	U	300	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	300	U	300	39	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	300	U	300	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	300	U	300	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	300	U	300	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	300	U	300	29	ug/kg	1
Hexachloroethane	67-72-1	8270D	300	U	300	11	ug/kg	1
Isophorone	78-59-1	8270D	220	U	220	8.9	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	300	U	300	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	300	U	300	7.2	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	81	U	81	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	300	U	300	28	ug/kg	1
3-Nitroaniline	99-09-2	8270D	300	U	300	47	ug/kg	1
4-Nitroaniline	100-01-6	8270D	300	U	300	23	ug/kg	1
Nitrobenzene	98-95-3	8270D	300	U	300	6.5	ug/kg	1
2-Nitrophenol	88-75-5	8270D	300	U	300	22	ug/kg	1
4-Nitrophenol	100-02-7	8270D	360	U	360	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	300	U	300	16	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
11/5/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 0951	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	300	U	300	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	510	U	510	170	ug/kg	1
Phenol	108-95-2	8270D	300	U	300	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	300	U	300	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	300	U	300	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		44	35-100
2-Fluorobiphenyl	N	43	45-105
Terphenyl-d14		51	30-125
2-Fluorophenol		41	35-105
Phenol-d5		41	40-100
2,4,6-Tribromophenol		60	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
1/15/10

Semivolatile Organic Compounds by GC/MS

13

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 1011	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	320 UJ	U	320	23	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	320	U	320	22	ug/kg	1
Benzaldehyde	100-52-7	8270D	320	U	320	22	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	320	U	320	13	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	320	U	320	13	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	320	U	320	28	ug/kg	1
Caprolactam	105-60-2	8270D	320	U	320	22	ug/kg	1
Carbazole	86-74-8	8270D	320	U	320	18	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	320	U	320	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	320	U	320	8.7	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	320	U	320	13	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	42	U	42	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	320	U	320	14	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	320	U	320	14	ug/kg	1
2-Chlorophenol	95-57-8	8270D	320	U	320	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	320	U	320	14	ug/kg	1
Dibenzofuran	132-64-9	8270D	320	U	320	13	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	320	U	320	46	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	320	U	320	13	ug/kg	1
Diethylphthalate	84-66-2	8270D	320	U	320	14	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	320	U	320	14	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	320	U	320	15	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	320	U	320	23	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	500	U	500	170	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	420	U	420	140	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	320	U	320	23	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	320	U	320	22	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	320	U	320	41	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	320	U	320	15	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	320	U	320	19	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	320	U	320	14	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	320	U	320	31	ug/kg	1
Hexachloroethane	67-72-1	8270D	320	U	320	11	ug/kg	1
Isophorone	78-59-1	8270D	230	U	230	9.5	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	320	U	320	13	ug/kg	1
2-Methylphenol	95-48-7	8270D	320	U	320	7.7	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	86	U	86	15	ug/kg	1
2-Nitroaniline	88-74-4	8270D	320	U	320	30	ug/kg	1
3-Nitroaniline	99-09-2	8270D	320	U	320	50	ug/kg	1
4-Nitroaniline	100-01-6	8270D	320	U	320	24	ug/kg	1
Nitrobenzene	98-95-3	8270D	320	U	320	6.9	ug/kg	1
2-Nitrophenol	88-75-5	8270D	320	U	320	23	ug/kg	1
4-Nitrophenol	100-02-7	8270D	390	U	390	120	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	320	U	320	17	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
1/15/10

13

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 1011	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	320 UJ	U	320	11	ug/kg	1 SSL
Pentachlorophenol	87-86-5	8270D	540	U	540	180	ug/kg	1
Phenol	108-95-2	8270D	320	U	320	12	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	320	U	320	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	320	U	320	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	31	35-100
2-Fluorobiphenyl	N	31	45-105
Terphenyl-d14		32	30-125
2-Fluorophenol	N	28	35-105
Phenol-d5	N	31	40-100
2,4,6-Tribromophenol		43	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 1031	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	290	U	290	21	ug/kg	1
Atrazine	1912-24-9	8270D	290	U	290	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	290	U	290	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	290	U	290	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	11	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	25	ug/kg	1
Caprolactam	105-60-2	8270D	290	U	290	20	ug/kg	1
Carbazole	86-74-8	8270D	290	U	290	16	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.7	ug/kg	1
4-Chloroaniline	106-47-8	8270D	290	U	290	7.8	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	38	U	38	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	41	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	450	U	450	150	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	380	U	380	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	290	U	290	37	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	290 ~~16~~	U ~~J~~	**290**	**14**	**ug/kg**	**1** PBL
Hexachlorobenzene	118-74-1	8270D	290	U	290	17	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	1
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	1
Isophorone	78-59-1	8270D	210	U	210	8.5	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	290	U	290	11	ug/kg	1
2-Methylphenol	95-48-7	8270D	290	U	290	6.9	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	77	U	77	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	290	U	290	26	ug/kg	1
3-Nitroaniline	99-09-2	8270D	290	U	290	45	ug/kg	1
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	1
Nitrobenzene	98-95-3	8270D	290	U	290	6.2	ug/kg	1
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	1
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

14

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/02/2009 1031	CRM	10/19/2009 1947	19886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	9.9	ug/kg	1
Pentachlorophenol	87-86-5	8270D	480	U	480	160	ug/kg	1
Phenol	108-95-2	8270D	290	U	290	10	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		64	35-100
2-Fluorobiphenyl		63	45-105
Terphenyl-d14		61	30-125
2-Fluorophenol		62	35-105
Phenol-d5		60	40-100
2,4,6-Tribromophenol		81	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ10006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB100909	KJ10006-001	Water
2	IR87-TB02-100909	KJ10006-002	Water
3	IR86-SB107-16-17-09D	KJ10006-005	Soil
4	IR86-SS105-0-0.5-09D	KJ10006-006	Soil
4RE	IR86-SS105-0-0.5-09DRE	KJ10006-006RE	Soil
5	IR86-SS106-0-0.5-09D	KJ10006-007	Soil
5RE	IR86-SS106-0-0.5-09DRE	KJ10006-007RE	Soil
6	IR86-SB106-07-08-09D	KJ10006-008	Soil
7	IR86-EB01-101009-SB	KJ10006-009	Water
8	IR86-SS107-0-0.5-09D	KJ10006-010	Soil
9	IR86-TB01-101009	KJ10006-011	Water
10	IR86-EB01-101109-SB	KJ10006-012	Water
11	IR86-SB107-07-08-09D	KJ10006-013	Soil
12	IR86-SB107D-07-08-09D	KJ10006-014	Soil
12RE	IR86-SB107D-07-08-09DRE	KJ10006-014RE	Soil
13	IR86-SS108-0-0.5-09D	KJ10006-015	Soil
13RE	IR86-SS108-0-0.5-09DRE	KJ10006-015RE	Soil
14	IR86-SB108-05-06-09D	KJ10006-016	Soil
15	IR86-SS110-0-0.5-09D	KJ10006-017	Soil
15RE	IR86-SS110-0-0.5-09DRE	KJ10006-017RE	Soil
16	IR86-SS111-0-0.5-09D	KJ10006-018	Soil
16RE	IR86-SS111-0-0.5-09DRE	KJ10006-018RE	Soil
17	IR86-TB01-101109	KJ10006-019	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/13/09 (0929)	Bromomethane	28.41%	J/UJ	3, 6, 14
	2-Butanone	0.049 RRF	J/R	
10/13/09 (2351)	Bromomethane	31.77%	J/UJ	11
10/14/09	2-Hexanone	26.22%	J/UJ	2, 17

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
4	Bromofluorobenzene	75%	J/UJ
4RE	Bromofluorobenzene	72%	J/UJ
5	Bromofluorobenzene	68%	J/UJ
5RE	Bromofluorobenzene	73%	J/UJ
12	Bromofluorobenzene	79%	J/UJ
12RE	Bromofluorobenzene	78%	None - See IS
13	Bromofluorobenzene	60%	J/UJ
13RE	Bromofluorobenzene	68%	J/UJ
15	Bromofluorobenzene	69%	J/UJ
15RE	Bromofluorobenzene	71%	J/UJ
16	Bromofluorobenzene	71%	J/UJ
16RE	Bromofluorobenzene	76%	J/UJ

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19582	1,2-Dibromoethane (EDB)	79%	J/UJ	2, 17

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
4RE	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates
5	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates
5RE	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates

Sample ID	Internal Standard	Area Count	Qualifier
12RE	IS1=Pentafluorobenzene	Low	J/UJ
	IS2=1,4-Difluorobenzene	Severely Low	J/R
	IS3=Chlorobenzene-d5	Low	J/UJ
	IS4=1,4-Dichlorobenzene-d4	Severely Low	J/R
13	IS3=Chlorobenzene-d5	Low	None - See Surrogates
	IS4=1,4-Dichlorobenzene-d4		
13RE	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates
15	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates
15RE	IS4=1,4-Dichlorobenzene-d4	Low	None - See Surrogates

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-FB100909	None - ND	-	-	-	-
IR87-TB02-100909	Methylene chloride	0.90	9.0	None	All ND
IR86-EB01-101009-SB	Carbon disulfide	0.13	0.65	U	3
IR86-TB01-101009	Methylene chloride	0.84	8.4	U	4RE
IR86-EB01-101109-SB	None - ND	-	-	-	-
IR86-TB01-101109	Methylene chloride	0.85	8.5	None	All ND
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SB107-07-08-09D ug/kg	IR86-SB107D-07-08-09D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Several samples exhibited surrogate and internal standard deficiencies. See Form Is for which to report.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB100909**
Date Sampled: **10/09/2009 1415**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1415	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB100909**
Date Sampled: **10/09/2009 1415**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1415	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-120
Toluene-d8		109	85-120
Bromofluorobenzene		106	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR87-TB02-100909**
Date Sampled: **10/09/2009**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1405	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ	0.50	0.061	ug/L	1	BSL
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	**75-09-2**	**8260B**	**0.90**	**J**	**1.0**	**0.17**	**ug/L**	**1**	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW
1/15/10

Volatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR87-TB02-100909**
Date Sampled: **10/09/2009**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1405	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-120
Toluene-d8		114	85-120
Bromofluorobenzene		105	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-16-17-09D**
Date Sampled: **10/10/2009 1500**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-005**
Matrix: **Solid**
% Solids: **82.9** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1332	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		21	1.9	ug/kg	1
Benzene	71-43-2	8260B	ND		5.2	1.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		5.2	1.1	ug/kg	1
Bromoform	75-25-2	8260B	ND		10	0.73	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	~~ND~~ UJ		10	1.9	ug/kg	1 CCH
2-Butanone (MEK)	78-93-3	8260B	~~ND~~ R		10	2.5	ug/kg	1 CC
Carbon disulfide	**75-15-0**	**8260B**	5.2 ~~ND~~ U		**5.2**	**1.3**	**ug/kg**	1 GBL
Carbon tetrachloride	56-23-5	8260B	ND		5.2	1.9	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		5.2	1.6	ug/kg	1
Chloroethane	75-00-3	8260B	ND		5.2	1.3	ug/kg	1
Chloroform	67-66-3	8260B	ND		5.2	0.86	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.2	1.0	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		5.2	0.70	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.2	1.6	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		5.2	0.65	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.2	0.88	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.2	0.96	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.2	1.3	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.2	1.6	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.2	1.7	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.2	0.76	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.2	1.0	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.2	1.8	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.2	0.79	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.2	1.6	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.2	0.94	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.2	0.70	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.2	0.85	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		5.2	1.1	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		10	1.3	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		5.2	0.83	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		5.2	0.69	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.2	0.41	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	1.6	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		5.2	0.63	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		5.2	2.7	ug/kg	1
Styrene	100-42-5	8260B	ND		5.2	1.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.2	0.49	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		5.2	2.4	ug/kg	1
Toluene	108-88-3	8260B	ND		5.2	1.5	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.2	2.2	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.2	1.0	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.2	0.88	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.2	0.82	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ10006-005**
Description: **IR86-SB107-16-17-09D**	Matrix: **Solid**
Date Sampled: **10/10/2009 1500**	% Solids: **82.9** **10/12/2009 2256**
Date Received: **10/10/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1332	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		5.2	2.0	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.2	1.6	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		5.2	0.89	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		5.2	3.0	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		91	85-120
1,2-Dichloroethane-d4		84	53-142
Toluene-d8		104	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Use reanalysis

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0528	MZ		19449
2	5035	8260B	1	10/22/2009 1438	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**250**	J	**31**	**2.8**	**ug/kg**	**1** SSL
Benzene	71-43-2	8260B	ND	UJ	7.8	1.7	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		7.8	1.7	ug/kg	1
Bromoform	75-25-2	8260B	ND		16	1.1	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		16	2.8	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		16	3.7	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		7.8	2.0	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		7.8	2.8	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		7.8	2.3	ug/kg	1
Chloroethane	75-00-3	8260B	ND		7.8	2.0	ug/kg	1
Chloroform	67-66-3	8260B	ND		7.8	1.3	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		7.8	1.6	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		7.8	1.1	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		7.8	2.3	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		7.8	0.98	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		7.8	1.3	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		7.8	1.5	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		7.8	2.0	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		7.8	2.3	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		7.8	2.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		7.8	1.1	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		7.8	1.6	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		7.8	2.7	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		7.8	1.2	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		7.8	2.3	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		7.8	1.4	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		7.8	1.1	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		7.8	1.3	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		7.8	1.7	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		16	2.0	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		7.8	1.2	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		7.8	1.0	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		7.8	0.62	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		16	2.3	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		7.8	0.95	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		7.8	4.1	ug/kg	1
Styrene	100-42-5	8260B	ND		7.8	1.7	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		7.8	0.73	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		7.8	3.6	ug/kg	1
Toluene	108-88-3	8260B	ND		7.8	2.2	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		7.8	3.3	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		7.8	1.6	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		7.8	1.3	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0528	MZ		19449
2	5035	8260B	1	10/22/2009 1438	DLB		20188

Use reanalyses

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	7.8	1.2	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	ND		7.8	3.0	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		7.8	2.3	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		7.8	1.3	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		7.8	4.5	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	75	85-120	N	72	85-120
1,2-Dichloroethane-d4		86	53-142		100	53-142
Toluene-d8		93	85-115		100	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

4RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0528	MZ		19449
2	5035	8260B	1	10/22/2009 1438	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	22	2.0	ug/kg	2 SSL
Benzene	71-43-2	8260B	ND		5.5	1.2	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		5.5	1.2	ug/kg	2
Bromoform	75-25-2	8260B	ND		11	0.77	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		11	2.0	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		11	2.7	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		5.5	1.4	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		5.5	2.0	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		5.5	1.7	ug/kg	2
Chloroethane	75-00-3	8260B	ND		5.5	1.4	ug/kg	2
Chloroform	67-66-3	8260B	ND		5.5	0.92	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.5	1.1	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		5.5	0.75	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.5	1.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		5.5	0.70	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.5	0.94	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.5	1.0	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.5	1.4	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.5	1.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		5.5	1.8	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.5	0.81	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		5.5	1.1	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		5.5	1.9	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.5	0.84	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.5	1.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		5.5	1.0	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.5	0.75	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.5	0.91	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		5.5	1.2	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		11	1.4	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND		5.5	0.89	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		5.5	0.74	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.5	0.44	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		11	1.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		5.5	0.67	ug/kg	2
Methylene chloride	**75-09-2**	**8260B**	**9.9**	UJ	**5.5**	**2.9**	**ug/kg**	**2** TBL
Styrene	100-42-5	8260B	ND	UJ	5.5	1.2	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.5	0.52	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		5.5	2.5	ug/kg	2
Toluene	**108-88-3**	**8260B**	**4.2**	J	**5.5**	**1.5**	**ug/kg**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND	UJ	5.5	2.3	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.5	1.1	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.5	0.94	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

4RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS105-0-0.5-09D**
Date Sampled: **10/10/2009 0800**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-006**
Matrix: **Solid**
% Solids: **79.7** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0528	MZ		19449
2	5035	8260B	1	10/22/2009 1438	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.5	0.87	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	ND		5.5	2.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		5.5	1.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		5.5	0.95	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		5.5	3.2	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	75	85-120	N	72	85-120
1,2-Dichloroethane-d4		86	53-142		100	53-142
Toluene-d8		93	85-115		100	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0551	MZ		19612
2	5035	8260B	1	10/13/2009 1355	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	26	2.4	ug/kg	1 SSL
Benzene	71-43-2	8260B	ND		6.6	1.5	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		6.6	1.5	ug/kg	1
Bromoform	75-25-2	8260B	ND		13	0.93	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		13	2.4	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		13	3.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		6.6	1.7	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		6.6	2.4	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		6.6	2.0	ug/kg	1
Chloroethane	75-00-3	8260B	ND		6.6	1.7	ug/kg	1
Chloroform	67-66-3	8260B	ND		6.6	1.1	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		6.6	1.3	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		6.6	0.89	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		6.6	2.0	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		6.6	0.83	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		6.6	1.1	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		6.6	1.2	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		6.6	1.7	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		6.6	2.0	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		6.6	2.1	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		6.6	0.97	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		6.6	1.3	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		6.6	2.3	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		6.6	1.0	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		6.6	2.0	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		6.6	1.2	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		6.6	0.90	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		6.6	1.1	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		6.6	1.5	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		13	1.7	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		6.6	1.1	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		6.6	0.89	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		6.6	0.53	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		13	2.0	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		6.6	0.81	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		6.6	3.4	ug/kg	1
Styrene	100-42-5	8260B	ND		6.6	1.5	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		6.6	0.62	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		6.6	3.0	ug/kg	1
Toluene	108-88-3	8260B	ND		6.6	1.9	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		6.6	2.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		6.6	1.3	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		6.6	1.1	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0551	MZ		19612
2	5035	8260B	1	10/13/2009 1355	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	6.6	1.0	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	ND		6.6	2.5	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		6.6	2.0	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		6.6	1.1	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		6.6	3.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	68	85-120	N	73	85-120
1,2-Dichloroethane-d4		88	53-142		94	53-142
Toluene-d8		101	85-115		93	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

SRE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0551	MZ		19612
2	5035	8260B	1	10/13/2009 1355	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	23	2.1	ug/kg	2 SSL
Benzene	71-43-2	8260B	ND		5.7	1.3	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		5.7	1.3	ug/kg	2
Bromoform	75-25-2	8260B	ND		11	0.80	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		11	2.1	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		11	2.7	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		5.7	1.5	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		5.7	2.1	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		5.7	1.7	ug/kg	2
Chloroethane	75-00-3	8260B	ND		5.7	1.5	ug/kg	2
Chloroform	67-66-3	8260B	ND		5.7	0.95	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.7	1.1	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		5.7	0.77	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.7	1.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		5.7	0.72	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.7	0.97	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.7	1.1	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.7	1.5	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.7	1.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		5.7	1.8	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.7	0.83	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		5.7	1.1	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		5.7	1.9	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.7	0.87	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.7	1.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		5.7	1.0	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.7	0.78	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.7	0.94	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		5.7	1.3	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		11	1.5	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND	UJ	5.7	0.92	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		5.7	0.77	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.7	0.46	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		11	1.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		5.7	0.70	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		5.7	3.0	ug/kg	2
Styrene	100-42-5	8260B	ND		5.7	1.3	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.7	0.54	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		5.7	2.6	ug/kg	2
Toluene	108-88-3	8260B	ND		5.7	1.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.7	2.4	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.7	1.1	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.7	0.97	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NED
1/15/10

SRE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS106-0-0.5-09D**
Date Sampled: **10/10/2009 0930**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-007**
Matrix: **Solid**
% Solids: **79.6** **10/12/2009 2256**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/12/2009 0551	MZ		19612
2	5035	8260B	1	10/13/2009 1355	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.7	0.90	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	ND		5.7	2.2	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		5.7	1.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		5.7	0.98	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		5.7	3.3	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	68	85-120	N	73	85-120
1,2-Dichloroethane-d4		88	53-142		94	53-142
Toluene-d8		101	85-115		93	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

KEJ
1/15/10

6

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1419	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		23	2.1	ug/kg	1
Benzene	71-43-2	8260B	ND		5.8	1.3	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		5.8	1.3	ug/kg	1
Bromoform	75-25-2	8260B	ND		12	0.81	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	~~ND~~	UJ	12	2.1	ug/kg	1 CCH
2-Butanone (MEK)	78-93-3	8260B	~~ND~~	R	12	2.8	ug/kg	1 CC
Carbon disulfide	75-15-0	8260B	ND		5.8	1.5	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		5.8	2.1	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		5.8	1.7	ug/kg	1
Chloroethane	75-00-3	8260B	ND		5.8	1.5	ug/kg	1
Chloroform	67-66-3	8260B	ND		5.8	0.96	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.8	1.2	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		5.8	0.78	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.8	1.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		5.8	0.73	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.8	0.98	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.8	1.1	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.8	1.5	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.8	1.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.8	1.8	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.8	0.84	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.8	1.2	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.8	2.0	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.8	0.88	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.8	1.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.8	1.0	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.8	0.78	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.8	0.94	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		5.8	1.3	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		12	1.5	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		5.8	0.92	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		5.8	0.77	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.8	0.46	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		12	1.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		5.8	0.70	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		5.8	3.0	ug/kg	1
Styrene	100-42-5	8260B	ND		5.8	1.3	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.8	0.54	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		5.8	2.6	ug/kg	1
Toluene	108-88-3	8260B	ND		5.8	1.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.8	2.4	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.8	1.2	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.8	0.98	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.8	0.91	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

6

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB106-07-08-09D**
Date Sampled: **10/10/2009 1015**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-008**
Matrix: **Solid**
% Solids: **79.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1419	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		5.8	2.2	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.8	1.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		5.8	0.99	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		5.8	3.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		86	85-120
1,2-Dichloroethane-d4		88	53-142
Toluene-d8		102	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NEJ
11/15/10

Volatile Organic Compounds by GC/MS

7

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1436	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	**75-15-0**	**8260B**	**0.13**	**J**	**1.0**	**0.097**	**ug/L**	**1**
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

7

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101009-SB**
Date Sampled: **10/10/2009 1210**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1436	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-120
Toluene-d8		110	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	5035	8260B	1	10/21/2009 1714	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		31	2.8	ug/kg	3
Benzene	71-43-2	8260B	ND		7.8	1.7	ug/kg	3
Bromodichloromethane	75-27-4	8260B	ND		7.8	1.7	ug/kg	3
Bromoform	75-25-2	8260B	ND		16	1.1	ug/kg	3
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		16	2.8	ug/kg	3
2-Butanone (MEK)	78-93-3	8260B	ND		16	3.8	ug/kg	3
Carbon disulfide	75-15-0	8260B	ND		7.8	2.0	ug/kg	3
Carbon tetrachloride	56-23-5	8260B	ND		7.8	2.8	ug/kg	3
Chlorobenzene	108-90-7	8260B	ND		7.8	2.4	ug/kg	3
Chloroethane	75-00-3	8260B	ND		7.8	2.0	ug/kg	3
Chloroform	67-66-3	8260B	ND		7.8	1.3	ug/kg	3
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		7.8	1.6	ug/kg	3
Cyclohexane	110-82-7	8260B	ND		7.8	1.1	ug/kg	3
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		7.8	2.4	ug/kg	3
Dibromochloromethane	124-48-1	8260B	ND		7.8	0.99	ug/kg	3
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		7.8	1.3	ug/kg	3
1,2-Dichlorobenzene	95-50-1	8260B	ND		7.8	1.5	ug/kg	3
1,3-Dichlorobenzene	541-73-1	8260B	ND		7.8	2.0	ug/kg	3
1,4-Dichlorobenzene	106-46-7	8260B	ND		7.8	2.4	ug/kg	3
Dichlorodifluoromethane	75-71-8	8260B	ND		7.8	2.5	ug/kg	3
1,1-Dichloroethane	75-34-3	8260B	ND		7.8	1.1	ug/kg	3
1,2-Dichloroethane	107-06-2	8260B	ND		7.8	1.6	ug/kg	3
1,1-Dichloroethene	75-35-4	8260B	ND		7.8	2.7	ug/kg	3
cis-1,2-Dichloroethene	156-59-2	8260B	ND		7.8	1.2	ug/kg	3
trans-1,2-Dichloroethene	156-60-5	8260B	ND		7.8	2.4	ug/kg	3
1,2-Dichloropropane	78-87-5	8260B	ND		7.8	1.4	ug/kg	3
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		7.8	1.1	ug/kg	3
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		7.8	1.3	ug/kg	3
Ethylbenzene	100-41-4	8260B	ND		7.8	1.7	ug/kg	3
2-Hexanone	591-78-6	8260B	ND		16	2.0	ug/kg	3
Isopropylbenzene	98-82-8	8260B	ND		7.8	1.3	ug/kg	3
Methyl acetate	79-20-9	8260B	ND		7.8	1.1	ug/kg	3
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		7.8	0.63	ug/kg	3
4-Methyl-2-pentanone	108-10-1	8260B	ND		16	2.4	ug/kg	3
Methylcyclohexane	**108-87-2**	**8260B**	**7.4**	**J**	**7.8**	**0.96**	**ug/kg**	**3**
Methylene chloride	75-09-2	8260B	ND		7.8	4.1	ug/kg	3
Styrene	100-42-5	8260B	ND		7.8	1.7	ug/kg	3
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		7.8	0.74	ug/kg	3
Tetrachloroethene	127-18-4	8260B	ND		7.8	3.6	ug/kg	3
Toluene	**108-88-3**	**8260B**	**53**		**7.8**	**2.2**	**ug/kg**	**3**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		7.8	3.3	ug/kg	3
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		7.8	1.6	ug/kg	3
1,1,1-Trichloroethane	71-55-6	8260B	ND		7.8	1.3	ug/kg	3
1,1,2-Trichloroethane	79-00-5	8260B	ND		7.8	1.2	ug/kg	3

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS107-0-0.5-09D**
Date Sampled: **10/10/2009 1400**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-010**
Matrix: **Solid**
% Solids: **90.8** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	5035	8260B	1	10/21/2009 1714	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		7.8	3.0	ug/kg	3
Trichlorofluoromethane	75-69-4	8260B	ND		7.8	2.4	ug/kg	3
Vinyl chloride	75-01-4	8260B	ND		7.8	1.3	ug/kg	3
Xylenes (total)	1330-20-7	8260B	ND		7.8	4.5	ug/kg	3

Surrogate	Q	Run 3 % Recovery	Acceptance Limits
Bromofluorobenzene		87	85-120
1,2-Dichloroethane-d4		93	53-142
Toluene-d8		99	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101009**
Date Sampled: **10/10/2009**
Date Received: **10/10/2009**
Laboratory ID: **KJ10006-011**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1518	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	**75-09-2**	**8260B**	**0.84**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

9

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101009**
Date Sampled: **10/10/2009**
Date Received: **10/10/2009**

Laboratory ID: **KJ10006-011**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1518	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		111	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1457	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101109-SB**
Date Sampled: **10/11/2009 0900**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-012**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/13/2009 1457	DLB		19546

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-120
Toluene-d8		109	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0343	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		39	3.5	ug/kg	1
Benzene	71-43-2	8260B	ND		9.7	2.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		9.7	2.1	ug/kg	1
Bromoform	75-25-2	8260B	ND		19	1.4	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	~~ND~~	UJ	19	3.5	ug/kg	1 CCH
2-Butanone (MEK)	78-93-3	8260B	ND		19	4.6	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		9.7	2.5	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		9.7	3.5	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		9.7	2.9	ug/kg	1
Chloroethane	75-00-3	8260B	ND		9.7	2.5	ug/kg	1
Chloroform	67-66-3	8260B	ND		9.7	1.6	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		9.7	1.9	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		9.7	1.3	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		9.7	2.9	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		9.7	1.2	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		9.7	1.6	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		9.7	1.8	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		9.7	2.5	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		9.7	2.9	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		9.7	3.1	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		9.7	1.4	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		9.7	1.9	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		9.7	3.3	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		9.7	1.5	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		9.7	2.9	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		9.7	1.8	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		9.7	1.3	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		9.7	1.6	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		9.7	2.1	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		19	2.5	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		9.7	1.5	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		9.7	1.3	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		9.7	0.77	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		19	2.9	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		9.7	1.2	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		9.7	5.0	ug/kg	1
Styrene	100-42-5	8260B	ND		9.7	2.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		9.7	0.91	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		9.7	4.4	ug/kg	1
Toluene	108-88-3	8260B	ND		9.7	2.7	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		9.7	4.1	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		9.7	1.9	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		9.7	1.6	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		9.7	1.5	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

11

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107-07-08-09D**
Date Sampled: **10/11/2009 0830**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-013**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0343	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		9.7	3.7	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		9.7	2.9	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		9.7	1.7	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		9.7	5.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		91	85-120
1,2-Dichloroethane-d4		93	53-142
Toluene-d8		109	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hwj
1/15/10

12

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0406	MZ		19609
2	5035	8260B	1	10/13/2009 1506	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	36	3.3	ug/kg	1 SSL
Benzene	71-43-2	8260B	ND		9.1	2.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		9.1	2.0	ug/kg	1
Bromoform	75-25-2	8260B	ND		18	1.3	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		18	3.3	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		18	4.4	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		9.1	2.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		9.1	3.3	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		9.1	2.7	ug/kg	1
Chloroethane	75-00-3	8260B	ND		9.1	2.4	ug/kg	1
Chloroform	67-66-3	8260B	ND		9.1	1.5	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		9.1	1.8	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		9.1	1.2	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		9.1	2.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		9.1	1.1	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		9.1	1.5	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		9.1	1.7	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		9.1	2.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		9.1	2.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		9.1	2.9	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		9.1	1.3	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		9.1	1.8	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		9.1	3.1	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		9.1	1.4	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		9.1	2.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		9.1	1.7	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		9.1	1.2	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		9.1	1.5	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		9.1	2.0	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		18	2.4	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		9.1	1.5	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		9.1	1.2	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		9.1	0.73	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		18	2.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		9.1	1.1	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		9.1	4.7	ug/kg	1
Styrene	100-42-5	8260B	ND		9.1	2.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		9.1	0.85	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		9.1	4.2	ug/kg	1
Toluene	108-88-3	8260B	ND		9.1	2.5	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		9.1	3.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		9.1	1.8	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		9.1	1.5	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
1/15/10

12

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0406	MZ		19609
2	5035	8260B	1	10/13/2009 1506	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	~~ND~~	UJ	9.1	1.4	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	~~ND~~		9.1	3.5	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	~~ND~~		9.1	2.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	~~ND~~		9.1	1.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	~~ND~~		9.1	5.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	79	85-120	N	78	85-120
1,2-Dichloroethane-d4		86	53-142		96	53-142
Toluene-d8		100	85-115		102	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

12RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0406	MZ		19609
2	5035	8260B	1	10/13/2009 1506	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	22	2.0	ug/kg	2 SSL
Benzene	71-43-2	8260B	ND	R	5.5	1.2	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND	R	5.5	1.2	ug/kg	2
Bromoform	75-25-2	8260B	ND	R	11	0.76	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND	UJ	11	2.0	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND	R	11	2.6	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND	UJ	5.5	1.4	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND	R	5.5	2.0	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND	UJ	5.5	1.6	ug/kg	2
Chloroethane	75-00-3	8260B	ND		5.5	1.4	ug/kg	2
Chloroform	67-66-3	8260B	ND		5.5	0.91	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.5	1.1	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		5.5	0.74	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.5	1.6	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND	R	5.5	0.69	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND	R	5.5	0.93	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.5	1.0	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.5	1.4	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.5	1.6	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND	UJ	5.5	1.7	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.5	0.80	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND	R	5.5	1.1	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND	UJ	5.5	1.9	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.5	0.83	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.5	1.6	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND	R	5.5	0.99	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND	R	5.5	0.74	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND	R	5.5	0.89	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND	UJ	5.5	1.2	ug/kg	2
2-Hexanone	591-78-6	8260B	ND	R	11	1.4	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND	R	5.5	0.87	ug/kg	2
Methyl acetate	79-20-9	8260B	ND	UJ	5.5	0.73	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.5	0.44	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND	R	11	1.6	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND	UJ	5.5	0.67	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		5.5	2.8	ug/kg	2
Styrene	100-42-5	8260B	ND		5.5	1.2	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND	R	5.5	0.51	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND	R	5.5	2.5	ug/kg	2
Toluene	108-88-3	8260B	ND	R	5.5	1.5	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND	UJ	5.5	2.3	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND	R	5.5	1.1	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND	UJ	5.5	0.93	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
1/15/10

12RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB107D-07-08-09D**
Date Sampled: **10/11/2009 0835**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-014**
Matrix: **Solid**
% Solids: **83.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0406	MZ		19609
2	5035	8260B	1	10/13/2009 1506	MZ		20358

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	~~ND~~ R		5.5	0.86	ug/kg	2
Trichloroethene	79-01-6	8260B	~~ND~~ R		5.5	2.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND UJ		5.5	1.6	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		5.5	0.94	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		5.5	3.2	ug/kg	2

SSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	79	85-120	N	78	85-120
1,2-Dichloroethane-d4		86	53-142		96	53-142
Toluene-d8		100	85-115		102	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/15/10

13

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1529	MZ		19569
2	5035	8260B	1	10/14/2009 0430	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	32	2.9	ug/kg	1 SSC
Benzene	71-43-2	8260B	ND		8.1	1.8	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		8.1	1.8	ug/kg	1
Bromoform	75-25-2	8260B	ND		16	1.1	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		16	2.9	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		16	3.9	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		8.1	2.1	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		8.1	2.9	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		8.1	2.4	ug/kg	1
Chloroethane	75-00-3	8260B	ND		8.1	2.1	ug/kg	1
Chloroform	67-66-3	8260B	ND		8.1	1.3	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		8.1	1.6	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		8.1	1.1	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		8.1	2.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		8.1	1.0	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		8.1	1.4	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		8.1	1.5	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		8.1	2.1	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		8.1	2.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		8.1	2.6	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		8.1	1.2	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		8.1	1.6	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		8.1	2.8	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		8.1	1.2	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		8.1	2.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		8.1	1.5	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		8.1	1.1	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		8.1	1.3	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		8.1	1.8	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		16	2.1	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		8.1	1.3	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		8.1	1.1	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		8.1	0.65	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		16	2.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		8.1	0.99	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		8.1	4.2	ug/kg	1
Styrene	100-42-5	8260B	ND		8.1	1.8	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		8.1	0.76	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		8.1	3.7	ug/kg	1
Toluene	108-88-3	8260B	ND		8.1	2.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		8.1	3.4	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		8.1	1.6	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		8.1	1.4	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

13

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1529	MZ		19569
2	5035	8260B	1	10/14/2009 0430	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	8.1	1.3	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	ND		8.1	3.1	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		8.1	2.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		8.1	1.4	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		8.1	4.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	60	85-120	N	68	85-120
1,2-Dichloroethane-d4		88	53-142		92	53-142
Toluene-d8		93	85-115		101	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

13RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1529	MZ		19569
2	5035	8260B	1	10/14/2009 0430	MZ		19609

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	33	2.9	ug/kg	2 SSL
Benzene	71-43-2	8260B	ND		8.1	1.8	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		8.1	1.8	ug/kg	2
Bromoform	75-25-2	8260B	ND		16	1.1	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		16	2.9	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		16	3.9	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		8.1	2.1	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		8.1	2.9	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		8.1	2.4	ug/kg	2
Chloroethane	75-00-3	8260B	ND		8.1	2.1	ug/kg	2
Chloroform	67-66-3	8260B	ND		8.1	1.4	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		8.1	1.6	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		8.1	1.1	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		8.1	2.4	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		8.1	1.0	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		8.1	1.4	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		8.1	1.5	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		8.1	2.1	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		8.1	2.4	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		8.1	2.6	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		8.1	1.2	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		8.1	1.6	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		8.1	2.8	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		8.1	1.2	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		8.1	2.4	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		8.1	1.5	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		8.1	1.1	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		8.1	1.3	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		8.1	1.8	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		16	2.1	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND		8.1	1.3	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		8.1	1.1	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		8.1	0.65	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		16	2.4	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		8.1	0.99	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		8.1	4.2	ug/kg	2
Styrene	100-42-5	8260B	ND		8.1	1.8	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		8.1	0.77	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		8.1	3.7	ug/kg	2
Toluene	108-88-3	8260B	ND		8.1	2.3	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		8.1	3.4	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		8.1	1.6	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		8.1	1.4	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
1/15/10

13 RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS108-0-0.5-09D**
Date Sampled: **10/11/2009 1125**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-015**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1529	MZ		19569
2	5035	8260B	1	10/14/2009 0430	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	~~ND~~	UJ	8.1	1.3	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	~~ND~~		8.1	3.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	~~ND~~		8.1	2.4	ug/kg	2
Vinyl chloride	75-01-4	8260B	~~ND~~		8.1	1.4	ug/kg	2
Xylenes (total)	1330-20-7	8260B	~~ND~~		8.1	4.7	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	60	85-120	N	68	85-120
1,2-Dichloroethane-d4		88	53-142		92	53-142
Toluene-d8		93	85-115		101	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
1/15/10

14

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1553	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**25**		**18**	**1.6**	**ug/kg**	**1**
Benzene	71-43-2	8260B	ND		4.5	0.99	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		4.5	0.99	ug/kg	1
Bromoform	75-25-2	8260B	ND		9.0	0.63	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	~~ND~~	UJ	9.0	1.6	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	~~ND~~	R	9.0	2.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		4.5	1.2	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		4.5	1.6	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		4.5	1.3	ug/kg	1
Chloroethane	75-00-3	8260B	ND		4.5	1.2	ug/kg	1
Chloroform	67-66-3	8260B	ND		4.5	0.74	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		4.5	0.90	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		4.5	0.60	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		4.5	1.3	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		4.5	0.57	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		4.5	0.76	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		4.5	0.83	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		4.5	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		4.5	1.3	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		4.5	1.4	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		4.5	0.65	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		4.5	0.90	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		4.5	1.5	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		4.5	0.68	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		4.5	1.3	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		4.5	0.82	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		4.5	0.61	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		4.5	0.74	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		4.5	0.99	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		9.0	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		4.5	0.72	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		4.5	0.60	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		4.5	0.36	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		9.0	1.3	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		4.5	0.55	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		4.5	2.3	ug/kg	1
Styrene	100-42-5	8260B	ND		4.5	0.99	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		4.5	0.42	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		4.5	2.1	ug/kg	1
Toluene	108-88-3	8260B	ND		4.5	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		4.5	1.9	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		4.5	0.90	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		4.5	0.76	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		4.5	0.71	ug/kg	1

CCH
CC

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

14

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB108-05-06-09D**
Date Sampled: **10/11/2009 1435**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-016**
Matrix: **Solid**
% Solids: **82.4** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1553	MZ		19569

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		4.5	1.7	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		4.5	1.3	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		4.5	0.77	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		4.5	2.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		90	85-120
1,2-Dichloroethane-d4		99	53-142
Toluene-d8		108	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

15

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1616	MZ		19569
2	5035	8260B	1	10/14/2009 0453	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**130**	J	**36**	**3.3**	**ug/kg**	**1** SSL
Benzene	71-43-2	8260B	ND	UJ	9.1	2.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		9.1	2.0	ug/kg	1
Bromoform	75-25-2	8260B	ND		18	1.3	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		18	3.3	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		18	4.3	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		9.1	2.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		9.1	3.3	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		9.1	2.7	ug/kg	1
Chloroethane	75-00-3	8260B	ND		9.1	2.4	ug/kg	1
Chloroform	67-66-3	8260B	ND		9.1	1.5	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		9.1	1.8	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		9.1	1.2	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		9.1	2.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		9.1	1.1	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		9.1	1.5	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		9.1	1.7	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		9.1	2.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		9.1	2.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		9.1	2.9	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		9.1	1.3	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		9.1	1.8	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		9.1	3.1	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		9.1	1.4	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		9.1	2.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		9.1	1.6	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		9.1	1.2	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		9.1	1.5	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		9.1	2.0	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		18	2.4	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		9.1	1.4	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		9.1	1.2	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		9.1	0.72	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		18	2.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		9.1	1.1	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		9.1	4.7	ug/kg	1
Styrene	100-42-5	8260B	ND		9.1	2.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		9.1	0.85	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		9.1	4.2	ug/kg	1
Toluene	108-88-3	8260B	ND		9.1	2.5	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		9.1	3.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		9.1	1.8	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		9.1	1.5	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

15

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1616	MZ		19569
2	5035	8260B	1	10/14/2009 0453	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	9.1	1.4	ug/kg	1 SR
Trichloroethene	79-01-6	8260B	ND		9.1	3.4	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		9.1	2.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		9.1	1.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		9.1	5.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	69	85-120	N	71	85-120
1,2-Dichloroethane-d4		88	53-142		86	53-142
Toluene-d8		97	85-115		97	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

15 RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1616	MZ		19569
2	5035	8260B	1	10/14/2009 0453	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**71**	J	**49**	**4.4**	**ug/kg**	**2** SSL
Benzene	71-43-2	8260B	ND	UJ	12	2.7	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		12	2.7	ug/kg	2
Bromoform	75-25-2	8260B	ND		24	1.7	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		24	4.4	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		24	5.9	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		12	3.2	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		12	4.4	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		12	3.7	ug/kg	2
Chloroethane	75-00-3	8260B	ND		12	3.2	ug/kg	2
Chloroform	67-66-3	8260B	ND		12	2.0	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		12	2.4	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		12	1.6	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		12	3.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		12	1.5	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		12	2.1	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		12	2.3	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		12	3.2	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		12	3.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		12	3.9	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		12	1.8	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		12	2.4	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		12	4.2	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		12	1.9	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		12	3.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		12	2.2	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		12	1.7	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		12	2.0	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		12	2.7	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		24	3.2	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND		12	2.0	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		12	1.6	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		12	0.98	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		24	3.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		12	1.5	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		12	6.4	ug/kg	2
Styrene	100-42-5	8260B	ND		12	2.7	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		12	1.2	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		12	5.6	ug/kg	2
Toluene	108-88-3	8260B	ND		12	3.4	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		12	5.1	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		12	2.4	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		12	2.1	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/15/10

15RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS110-0-0.5-09D**
Date Sampled: **10/11/2009 1530**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-017**
Matrix: **Solid**
% Solids: **77.1** **10/12/2009 2256**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1616	MZ		19569
2	5035	8260B	1	10/14/2009 0453	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	12	1.9	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	ND		12	4.6	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		12	3.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		12	2.1	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		12	7.1	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	69	85-120	N	71	85-120
1,2-Dichloroethane-d4		88	53-142		86	53-142
Toluene-d8		97	85-115		97	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

1/15/10

16

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1639	MZ		19569
2	5035	8260B	1	10/21/2009 1738	DLB		19991

See reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**40**	J	**21**	**1.9**	**ug/kg**	**1**
Benzene	71-43-2	8260B	ND	UJ	5.3	1.2	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		5.3	1.2	ug/kg	1
Bromoform	75-25-2	8260B	ND		11	0.74	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		11	1.9	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		11	2.5	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		5.3	1.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		5.3	1.9	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		5.3	1.6	ug/kg	1
Chloroethane	75-00-3	8260B	ND		5.3	1.4	ug/kg	1
Chloroform	67-66-3	8260B	ND		5.3	0.88	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.3	1.1	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		5.3	0.71	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.3	1.6	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		5.3	0.67	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.3	0.90	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.3	0.98	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.3	1.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.3	1.6	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.3	1.7	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.3	0.77	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.3	1.1	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.3	1.8	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.3	0.80	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.3	1.6	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.3	0.96	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.3	0.72	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.3	0.87	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		5.3	1.2	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		11	1.4	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		5.3	0.85	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		5.3	0.71	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.3	0.42	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		11	1.6	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		5.3	0.65	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		5.3	2.8	ug/kg	1
Styrene	100-42-5	8260B	ND		5.3	1.2	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.3	0.50	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		5.3	2.4	ug/kg	1
Toluene	108-88-3	8260B	ND		5.3	1.5	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.3	2.2	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.3	1.1	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.3	0.90	ug/kg	1

SSL

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/15/10

16

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1639	MZ		19569
2	5035	8260B	1	10/21/2009 1738	DLB		19991

see reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.3	0.84	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	ND		5.3	2.0	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.3	1.6	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		5.3	0.91	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		5.3	3.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	71	85-120	N	76	85-120
1,2-Dichloroethane-d4		81	53-142		86	53-142
Toluene-d8		91	85-115		92	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

KEJ
1/15/10

16RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1639	MZ		19569
2	5035	8260B	1	10/21/2009 1738	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**140**	J	**31**	**2.8**	**ug/kg**	**2** SSL
Benzene	71-43-2	8260B	ND	UJ	7.7	1.7	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		7.7	1.7	ug/kg	2
Bromoform	75-25-2	8260B	ND		15	1.1	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		15	2.8	ug/kg	2
2-Butanone (MEK)	**78-93-3**	**8260B**	**20**	J	**15**	**3.7**	**ug/kg**	**2**
Carbon disulfide	75-15-0	8260B	ND	UJ	7.7	2.0	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		7.7	2.8	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		7.7	2.3	ug/kg	2
Chloroethane	75-00-3	8260B	ND		7.7	2.0	ug/kg	2
Chloroform	67-66-3	8260B	ND		7.7	1.3	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		7.7	1.5	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		7.7	1.0	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		7.7	2.3	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		7.7	0.97	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		7.7	1.3	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		7.7	1.4	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		7.7	2.0	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		7.7	2.3	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		7.7	2.5	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		7.7	1.1	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		7.7	1.5	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		7.7	2.6	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		7.7	1.2	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		7.7	2.3	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		7.7	1.4	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		7.7	1.1	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		7.7	1.3	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		7.7	1.7	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		15	2.0	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND		7.7	1.2	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		7.7	1.0	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		7.7	0.62	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		15	2.3	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		7.7	0.94	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		7.7	4.0	ug/kg	2
Styrene	100-42-5	8260B	ND		7.7	1.7	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		7.7	0.73	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		7.7	3.6	ug/kg	2
Toluene	108-88-3	8260B	ND		7.7	2.2	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		7.7	3.2	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		7.7	1.5	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		7.7	1.3	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
11/15/10

16RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS111-0-0.5-09D**
Date Sampled: **10/11/2009 1550**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-018**
Matrix: **Solid**
% Solids: **86.2** **10/12/2009 2256**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1639	MZ		19569
2	5035	8260B	1	10/21/2009 1738	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	~~ND~~	UJ	7.7	1.2	ug/kg	2
Trichloroethene	79-01-6	8260B	~~ND~~		7.7	2.9	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	~~ND~~		7.7	2.3	ug/kg	2
Vinyl chloride	75-01-4	8260B	~~ND~~		7.7	1.3	ug/kg	2
Xylenes (total)	1330-20-7	8260B	~~ND~~		7.7	4.5	ug/kg	2

SSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	71	85-120	N	76	85-120
1,2-Dichloroethane-d4		81	53-142		86	53-142
Toluene-d8		91	85-115		92	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
11/15/10

Volatile Organic Compounds by GC/MS

17

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101109**
Date Sampled: **10/11/2009**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-019**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1426	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ	0.50	0.061	ug/L	1	BSC
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	**75-09-2**	**8260B**	**0.85**	**J**	**1.0**	**0.17**	**ug/L**	**1**	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

17

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101109**
Date Sampled: **10/11/2009**
Date Received: **10/11/2009**

Laboratory ID: **KJ10006-019**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1426	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-120
Toluene-d8		114	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ13004

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB112-05-06-09D	KJ13004-011	Soil
2	IR86-SB113-02-03-09D	KJ13004-012	Soil
3	IR86-SS113-0-0.5-09D	KJ13004-013	Soil
4	IR86-SB111-01-02-09D	KJ13004-014	Soil
4MS	IR86-SB111-01-02-09DMS	KJ13004-014MS	Soil
4MSD	IR86-SB111-01-02-09DMSD	KJ13004-014MSD	Soil
5	IR86-SB110-06-07-09D	KJ13004-017	Soil
6	IR86-EB01-101209-SB	KJ13004-018	Water
6MS	IR86-EB01-101209-SBMS	KJ13004-018MS	Water
6MSD	IR86-EB01-101209-SBMSD	KJ13004-018MSD	Water
7	IR86-SS112-0-0.5-09D	KJ13004-019	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Aluminum	3.1	15.5	None	All ND
Arsenic	0.0035 mg/L	0.0175 mg/L	None	All ND
Potassium	24	120	U	3
Mercury	0.0062	0.0310	U	4, 5

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101209-SB	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS%R/MSD%R/RPD	Qualifier	Affected Samples
4	Antimony	39%/44%/Ok	J/UJ	1-5, 7
	Iron	153%/148%/Ok	J	
	Potassium	128%/126%/Ok	J	1, 2, 4, 5, 7

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Quantitation - Several samples were analyzed at various dilutions due to high concentrations of target compounds.

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0019	KJC	10/16/2009 1435	19455
2	3050B	6010C	2	10/20/2009 1552	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**43000**	~~P~~	**27**	**3.5**	**mg/kg**	**2**	
Antimony	**7440-36-0**	**6010C**	**0.44** J	~~P~~	**0.68**	**0.24**	**mg/kg**	**1**	MSL
Arsenic	**7440-38-2**	**6010C**	**20**		**1.4**	**0.51**	**mg/kg**	**2**	
Barium	**7440-39-3**	**6010C**	**43**		**1.8**	**0.12**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.52**		**0.27**	**0.038**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.32**		**0.14**	**0.014**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**79**	**J**	**340**	**24**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**58**		**0.34**	**0.069**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**2.2**		**1.8**	**0.13**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**5.0**		**0.68**	**0.13**	**mg/kg**	**2**	
Iron	**7439-89-6**	**6010C**	**25000** J		**6.8**	**2.2**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**19**		**1.4**	**0.25**	**mg/kg**	**2**	
Magnesium	**7439-95-4**	**6010C**	**1800**		**340**	**25**	**mg/kg**	**1**	
Manganese	**7439-96-5**	**6010C**	**18**		**1.0**	**0.079**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**6.1**		**2.7**	**0.21**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**1900** J	~~P~~	**340**	**15**	**mg/kg**	**1**	MSH
Selenium	**7782-49-2**	**6010C**	**0.92**	**J**	**1.4**	**0.47**	**mg/kg**	**2**	
Silver	7440-22-4	6010C	0.34	U	0.34	0.057	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**100**	**J**	**340**	**23**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	6.8	U	6.8	0.69	mg/kg	2	
Vanadium	**7440-62-2**	**6010C**	**120**		**3.4**	**0.20**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**16**		**3.4**	**0.46**	**mg/kg**	**1**	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

11/6/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1853	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.047**	**~~B~~J**	**0.11**	**0.0081**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/16/10

TAL Metals

2

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0023	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**14000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.60 UJ	~~U~~	0.60	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.61**		**0.60**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**15**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.24	U	0.24	0.034	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.021**	**J**	**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**29**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**13**		**0.30**	**0.061**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.1**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	7440-50-8	6010C	0.30	U	0.30	0.058	mg/kg	1
Iron	**7439-89-6**	**6010C**	**5400** J		**6.0**	**2.0**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**6.6**		**0.60**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**480**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**11**		**0.90**	**0.069**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**1.9**	**J**	**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**350** J	~~B~~	**300**	**13**	**mg/kg**	**1** MSH
Selenium	7782-49-2	6010C	0.60	U	0.60	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.050	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**41**	**J**	**300**	**21**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**20**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**3.9**		**3.0**	**0.41**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/10/10

2

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ13004-012**
Description: **IR86-SB113-02-03-09D**	Matrix: **Solid**
Date Sampled: **10/12/2009 1445**	% Solids: **83.5** **10/13/2009 2334**
Date Received: **10/13/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1856	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.034**	**BJ**	**0.099**	**0.0071**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
11/16/10

TAL Metals

3

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ13004-013**
Description: **IR86-SS113-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/12/2009 1430**	% Solids: **68.0** **10/13/2009 2334**
Date Received: **10/13/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0026	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**3100**	~~B~~	**15**	**1.9**	**mg/kg**	**1**	
Antimony	7440-36-0	6010C	0.74 UJ	~~U~~	0.74	0.26	mg/kg	1	MSL
Arsenic	7440-38-2	6010C	0.74	U	0.74	0.28	mg/kg	1	
Barium	**7440-39-3**	**6010C**	**28**		**1.9**	**0.13**	**mg/kg**	**1**	
Beryllium	7440-41-7	6010C	0.29	U	0.29	0.041	mg/kg	1	
Cadmium	**7440-43-9**	**6010C**	**0.11**	**J**	**0.15**	**0.015**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**260**	**J**	**370**	**26**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**3.4**		**0.37**	**0.075**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**0.61**	**J**	**1.9**	**0.14**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**1.4**		**0.37**	**0.071**	**mg/kg**	**1**	
Iron	**7439-89-6**	**6010C**	**2600** J		**7.4**	**2.4**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**15**		**0.74**	**0.14**	**mg/kg**	**1**	
Magnesium	**7439-95-4**	**6010C**	**99**	**J**	**370**	**27**	**mg/kg**	**1**	
Manganese	**7439-96-5**	**6010C**	**9.5**		**1.1**	**0.085**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**1.5**	**J**	**2.9**	**0.22**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	370 ~~92~~	~~J~~	**370**	**16**	**mg/kg**	**1**	MBL
Selenium	7782-49-2	6010C	0.74	U	0.74	0.26	mg/kg	1	
Silver	7440-22-4	6010C	0.37	U	0.37	0.062	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**54**	**J**	**370**	**25**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	3.7	U	3.7	0.37	mg/kg	1	
Vanadium	**7440-62-2**	**6010C**	**11**		**3.7**	**0.22**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**3.4**	**J**	**3.7**	**0.50**	**mg/kg**	**1**	

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

hel
11/16/10

3

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ13004-013**
Description: **IR86-SS113-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/12/2009 1430**	% Solids: **68.0** **10/13/2009 2334**
Date Received: **10/13/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1858	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.064**	**~~B~~J**	**0.12**	**0.0087**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/16/10

TAL Metals

4

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ13004-014**
Description: **IR86-SB111-01-02-09D**	Matrix: **Solid**
Date Sampled: **10/12/2009 0845**	% Solids: **85.1** **10/13/2009 2334**
Date Received: **10/13/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0037	KJC	10/16/2009 1435	19455
2	3050B	6010C	1	10/20/2009 1555	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**13000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	**7440-36-0**	**6010C**	**0.25** J	~~J~~	**0.59**	**0.21**	**mg/kg**	**2** MSL
Arsenic	7440-38-2	6010C	0.59	U	0.59	0.22	mg/kg	1
Barium	**7440-39-3**	**6010C**	**15**		**1.5**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.24	U	0.24	0.033	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.035**	**J**	**0.12**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**26**	**J**	**290**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**13**		**0.29**	**0.060**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.0**	**J**	**1.5**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**0.62**		**0.29**	**0.057**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2700** J		**5.9**	**1.9**	**mg/kg**	**2** MSH
Lead	**7439-92-1**	**6010C**	**6.8**		**0.59**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**450**		**290**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**13**		**0.88**	**0.068**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.1**	**J**	**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**430** J	~~B~~	**290**	**13**	**mg/kg**	**2** MSH
Selenium	7782-49-2	6010C	0.59	U	0.59	0.20	mg/kg	1
Silver	7440-22-4	6010C	0.29	U	0.29	0.049	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**40**	**J**	**290**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	2.9	U	2.9	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**16**		**2.9**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**4.3**		**2.9**	**0.40**	**mg/kg**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nej
1/16/10

4

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1902	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.044~~ 0.098u	~~Bd~~	**0.098**	**0.0069**	**mg/kg**	**1**

mgL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

11/16/10

5

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0047	KJC	10/16/2009 1435	19455
2	3050B	6010C	2	10/20/2009 1616	CDF	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**52000**	~~B~~	**29**	**3.7**	**mg/kg**	**2**	
Antimony	**7440-36-0**	**6010C**	**0.32** J	~~J~~	**0.72**	**0.26**	**mg/kg**	**1**	MSL
Arsenic	**7440-38-2**	**6010C**	**16**		**1.4**	**0.54**	**mg/kg**	**2**	
Barium	**7440-39-3**	**6010C**	**52**		**1.9**	**0.13**	**mg/kg**	**1**	
Beryllium	**7440-41-7**	**6010C**	**0.54**		**0.29**	**0.040**	**mg/kg**	**1**	
Cadmium	**7440-43-9**	**6010C**	**0.27**		**0.14**	**0.015**	**mg/kg**	**1**	
Calcium	**7440-70-2**	**6010C**	**91**	J	**360**	**26**	**mg/kg**	**1**	
Chromium	**7440-47-3**	**6010C**	**63**		**0.36**	**0.073**	**mg/kg**	**1**	
Cobalt	**7440-48-4**	**6010C**	**2.8**		**1.9**	**0.13**	**mg/kg**	**1**	
Copper	**7440-50-8**	**6010C**	**4.6**		**0.72**	**0.14**	**mg/kg**	**2**	
Iron	**7439-89-6**	**6010C**	**24000** J		**7.2**	**2.4**	**mg/kg**	**1**	MSH
Lead	**7439-92-1**	**6010C**	**20**		**1.4**	**0.27**	**mg/kg**	**2**	
Magnesium	**7439-95-4**	**6010C**	**2200**		**360**	**27**	**mg/kg**	**1**	
Manganese	**7439-96-5**	**6010C**	**23**		**1.1**	**0.083**	**mg/kg**	**1**	
Nickel	**7440-02-0**	**6010C**	**8.2**		**2.9**	**0.22**	**mg/kg**	**1**	
Potassium	**7440-09-7**	**6010C**	**2500** J	~~B~~	**360**	**16**	**mg/kg**	**1**	MSH
Selenium	**7782-49-2**	**6010C**	**0.67**	J	**1.4**	**0.50**	**mg/kg**	**2**	
Silver	7440-22-4	6010C	0.36	U	0.36	0.060	mg/kg	1	
Sodium	**7440-23-5**	**6010C**	**130**	J	**360**	**25**	**mg/kg**	**1**	
Thallium	7440-28-0	6010C	7.2	U	7.2	0.73	mg/kg	2	
Vanadium	**7440-62-2**	**6010C**	**100**		**3.6**	**0.22**	**mg/kg**	**1**	
Zinc	**7440-66-6**	**6010C**	**19**		**3.6**	**0.49**	**mg/kg**	**1**	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/6/10

5

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1912	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	~~0.026~~ 0.12U	~~B~~	**0.12**	**0.0085**	**mg/kg**	**1** MBL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LWS
11/16/10

TAL Metals

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/19/2009 2250	KJC	10/19/2009 1730	19871

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/14/10

Mercury

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/21/2009 2315	BNW	10/21/2009 1645	19954

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

WO
1/16/10

7

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0050	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**15000**	~~B~~	**12**	**1.5**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.60 UJ	~~U~~	0.60	0.21	mg/kg	1 MSL
Arsenic	**7440-38-2**	**6010C**	**0.61**		**0.60**	**0.22**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**20**		**1.6**	**0.11**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.24	U	0.24	0.033	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.063**	**J**	**0.12**	**0.013**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**160**	**J**	**300**	**21**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**13**		**0.30**	**0.060**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.4**	**J**	**1.6**	**0.11**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.7**		**0.30**	**0.058**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3700** J		**6.0**	**2.0**	**mg/kg**	**1** MSH
Lead	**7439-92-1**	**6010C**	**8.9**		**0.60**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**420**		**300**	**22**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**12**		**0.89**	**0.069**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**3.2**		**2.4**	**0.18**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**490** J	~~B~~	**300**	**13**	**mg/kg**	**1** MSH
Selenium	7782-49-2	6010C	0.60	U	0.60	0.21	mg/kg	1
Silver	7440-22-4	6010C	0.30	U	0.30	0.050	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**49**	**J**	**300**	**20**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.0	U	3.0	0.30	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**20**		**3.0**	**0.18**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**4.6**		**3.0**	**0.40**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
1/16/10

7

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/14/2009 1922	BNW	10/13/2009 2005	19520

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.051**	**BJ**	**0.099**	**0.0070**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

fw
1/16/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ13004

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB112-05-06-09D	KJ13004-011	Soil
2	IR86-SB113-02-03-09D	KJ13004-012	Soil
3	IR86-SS113-0-0.5-09D	KJ13004-013	Soil
4	IR86-SB111-01-02-09D	KJ13004-014	Soil
4MS	IR86-SB111-01-02-09DMS	KJ13004-014MS	Soil
4MSD	IR86-SB111-01-02-09DMSD	KJ13004-014MSD	Soil
5	IR86-SB110-06-07-09D	KJ13004-017	Soil
6	IR86-EB01-101209-SB	KJ13004-018	Water
6MS	IR86-EB01-101209-SBMS	KJ13004-018MS	Water
6MSD	IR86-EB01-101209-SBMSD	KJ13004-018MSD	Water
7	IR86-SS112-0-0.5-09D	KJ13004-019	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/28/09	Benzo(a)anthracene	25.46%	J/UJ	All Samples
	Chrysene	25.35%		
	Benzo(b)fluoranthene	28.54%		
	Benzo(a)pyrene	25.45%		
	Indeno(1,2,3-c,d)pyrene	32.68%		
	Dibenzo(a,h)anthracene	43.22%		
	Fluoranthene	25.86%		

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
4	Chrysene	27%/Ok/Ok	None - See CCAL
6	Five compounds	High RPD	None for RPD alone

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101209-SB	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2017	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.4	U	4.4	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.4	U	4.4	0.68	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.79	ug/kg	1 CCH
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.89	ug/kg	1 ↓
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.67	ug/kg	1 ↓
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.4	U	4.4	0.87	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.4	U	4.4	0.64	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.60	ug/kg	1 CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.68	ug/kg	1 ↓
Fluoranthene	206-44-0	8270D (SIM)	4.4 UJ	~~U~~	4.4	0.56	ug/kg	1 ↓
Fluorene	86-73-7	8270D (SIM)	4.4	U	4.4	0.77	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.4 UJ	~~U~~	4.4	1.3	ug/kg	1 CCH
Naphthalene	91-20-3	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.4	U	4.4	0.97	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.4	U	4.4	0.67	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		35	20-150
Fluoranthene-d10		50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
11/16/10

2

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2035	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.98	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.9 UJ	~~U~~	3.9	0.70	ug/kg	1 CCH
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.9	~~U~~	3.9	0.78	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.9	~~U~~	3.9	0.59	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.77	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.9	U	3.9	0.57	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.9 UJ	~~U~~	3.9	0.53	ug/kg	1 CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	~~U~~	3.9	0.60	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.9	~~U~~	3.9	0.49	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.67	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9 UJ	~~U~~	3.9	1.2	ug/kg	1 CCH
Naphthalene	91-20-3	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.9	U	3.9	0.85	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		38	20-150
Fluoranthene-d10		50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

KW
1/16/10

3

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-013**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2225	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	4.8	U	4.8	1.2	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	4.8	U	4.8	1.4	ug/kg	1	
Anthracene	120-12-7	8270D (SIM)	4.8	U	4.8	0.75	ug/kg	1	
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**9.4**	J	**4.8**	**0.86**	**ug/kg**	**1**	CCH
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**9.1**	↓	**4.8**	**0.97**	**ug/kg**	**1**	↓
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**14**	↓	**4.8**	**0.73**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1.4**	J	**4.8**	**0.95**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**7.9**		**4.8**	**0.70**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**3.6**	J ✓	**4.8**	**0.66**	**ug/kg**	**1**	CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.8	UJ ✓	4.8	0.75	ug/kg	1	↓
Fluoranthene	**206-44-0**	**8270D (SIM)**	**17**	J	**4.8**	**0.62**	**ug/kg**	**1**	
Fluorene	86-73-7	8270D (SIM)	4.8	U	4.8	0.84	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**2.0**	J ✓	**4.8**	**1.5**	**ug/kg**	**1**	CCH
Naphthalene	91-20-3	8270D (SIM)	4.8	U	4.8	1.4	ug/kg	1	
Phenanthrene	**85-01-8**	**8270D (SIM)**	**4.9**		**4.8**	**1.1**	**ug/kg**	**1**	
Pyrene	**129-00-0**	**8270D (SIM)**	**14**		**4.8**	**0.73**	**ug/kg**	**1**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		44	20-150
Fluoranthene-d10		54	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hes
1/16/10

4

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2053	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.98	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	3.9	UJ ~~U~~	3.9	0.69	ug/kg	1 CCH
Benzo(a)pyrene	50-32-8	8270D (SIM)	3.9	~~U~~	3.9	0.78	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	3.9	~~U~~	3.9	0.59	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.76	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	3.9	U	3.9	0.56	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	3.9	UJ ~~U~~	3.9	0.53	ug/kg	1 CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	~~U~~	3.9	0.60	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	3.9	~~U~~	3.9	0.49	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.67	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9	UJ ~~U~~	3.9	1.2	ug/kg	1 CCH
Naphthalene	91-20-3	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	3.9	U	3.9	0.85	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	3.9	U	3.9	0.59	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		37	20-150
Fluoranthene-d10		50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MEJ
11/16/10

5

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2148	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.7	U	4.7	1.2	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.7	U	4.7	1.3	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.7	U	4.7	0.72	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.7	UJ U	4.7	0.83	ug/kg	1 CCH
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.7	U	4.7	0.93	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.7	U	4.7	0.71	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.7	U	4.7	0.92	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.7	U	4.7	0.68	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.7	UJ U	4.7	0.63	ug/kg	1 CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.7	U	4.7	0.72	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.7	U	4.7	0.59	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.7	U	4.7	0.80	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.7	UJ U	4.7	1.4	ug/kg	1 CCH
Naphthalene	91-20-3	8270D (SIM)	4.7	U	4.7	1.4	ug/kg	1
Phenanthrene	85-01-8	8270D (SIM)	4.7	U	4.7	1.0	ug/kg	1
Pyrene	129-00-0	8270D (SIM)	4.7	U	4.7	0.71	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		34	20-150
Fluoranthene-d10		49	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
11/16/10

Semivolatile Organic Compounds by GC/MS (SIM)

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/28/2009 1808	GLR	10/19/2009 1712	19850

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1	
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1	
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1	
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	UJ U	0.21	0.020	ug/L	1	CCH
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1	
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1	
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1	
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1	
Chrysene	218-01-9	8270D (SIM)	0.21	UJ U	0.21	0.022	ug/L	1	CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1	
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1	
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1	
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	UJ U	0.21	0.052	ug/L	1	CCH
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1	
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1	
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		29	20-150
Fluoranthene-d10		46	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/16/10

7

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/28/2009 2206	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.9	U	3.9	0.97	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	3.9	U	3.9	0.60	ug/kg	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**3.6**	J	**3.9**	**0.69**	**ug/kg**	**1** CCH
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**3.6**		**3.9**	**0.77**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**4.6**		**3.9**	**0.59**	**ug/kg**	**1**
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	3.9	U	3.9	0.76	ug/kg	1
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**4.0**		**3.9**	**0.56**	**ug/kg**	**1**
Chrysene	218-01-9	8270D (SIM)	3.9	UJ	3.9	0.53	ug/kg	1 CCH
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	3.9	UJ	3.9	0.60	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**7.8**	J	**3.9**	**0.49**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	3.9	U	3.9	0.67	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	3.9	UJ	3.9	1.2	ug/kg	1 CCH
Naphthalene	91-20-3	8270D (SIM)	3.9	U	3.9	1.1	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**2.7**	J	**3.9**	**0.84**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**6.0**		**3.9**	**0.59**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		38	20-150
Fluoranthene-d10		52	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/16/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ13004

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB112-05-06-09D	KJ13004-011	Soil
2	IR86-SB113-02-03-09D	KJ13004-012	Soil
3	IR86-SS113-0-0.5-09D	KJ13004-013	Soil
4	IR86-SB111-01-02-09D	KJ13004-014	Soil
4MS	IR86-SB111-01-02-09DMS	KJ13004-014MS	Soil
4MSD	IR86-SB111-01-02-09DMSD	KJ13004-014MSD	Soil
5	IR86-SB110-06-07-09D	KJ13004-017	Soil
6	IR86-EB01-101209-SB	KJ13004-018	Water
7	IR86-SS112-0-0.5-09D	KJ13004-019	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
6 Pest	DCB/TCX	19%/Ok	J/UJ

Sample ID	Surrogate	%R	Qualifier
6 PCB	DCB/TCX	16%/Ok	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS sample exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19851	Endrin ketone	134%	None	All ND

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19851	Methoxychlor	0.027	0.135	None	All ND

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101209-SB	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All results reported with a (P) flag by the laboratory were further qualified as estimated (J).

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0138	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.3	U	2.3	0.45	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.3	U	2.3	0.48	ug/kg	1
alpha-BHC	319-84-6	8081B	2.3	U	2.3	0.52	ug/kg	1
beta-BHC	319-85-7	8081B	2.3	U	2.3	0.40	ug/kg	1
delta-BHC	319-86-8	8081B	2.3	U	2.3	0.42	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.3	U	2.3	0.38	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.3	U	2.3	0.32	ug/kg	1
4,4'-DDD	72-54-8	8081B	4.4	U	4.4	0.33	ug/kg	1
4,4'-DDE	72-55-9	8081B	4.4	U	4.4	0.42	ug/kg	1
4,4'-DDT	50-29-3	8081B	4.4	U	4.4	0.37	ug/kg	1
Dieldrin	60-57-1	8081B	4.4	U	4.4	0.44	ug/kg	1
Endosulfan I	959-98-8	8081B	2.3	U	2.3	0.45	ug/kg	1
Endosulfan II	**33213-65-9**	**8081B**	**3.5**	**J**	**4.4**	**0.33**	**ug/kg**	**1**
Endosulfan sulfate	1031-07-8	8081B	4.4	U	4.4	0.30	ug/kg	1
Endrin	72-20-8	8081B	4.4	U	4.4	0.44	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	4.4	U	4.4	0.40	ug/kg	1
Endrin ketone	53494-70-5	8081B	4.4	U	4.4	0.29	ug/kg	1
Heptachlor	76-44-8	8081B	2.3	U	2.3	0.52	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.3	U	2.3	0.41	ug/kg	1
Methoxychlor	72-43-5	8081B	23	U	23	1.8	ug/kg	1
Toxaphene	8001-35-2	8081B	40	U	40	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		115	55-130
Tetrachloro-m-xylene		85	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
11/6/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2126	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	44	U	44	1.5	ug/kg	1
Aroclor 1221	11104-28-2	8082A	89	U	89	13	ug/kg	1
Aroclor 1232	11141-16-5	8082A	44	U	44	4.4	ug/kg	1
Aroclor 1242	53469-21-9	8082A	44	U	44	3.0	ug/kg	1
Aroclor 1248	12672-29-6	8082A	44	U	44	5.0	ug/kg	1
Aroclor 1254	11097-69-1	8082A	44	U	44	2.4	ug/kg	1
Aroclor 1260	11096-82-5	8082A	44	U	44	7.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		106	60-125
Tetrachloro-m-xylene		93	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
1/16/10

2

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0154	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.40	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	1
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.46	ug/kg	1
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	1
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	1
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.29	ug/kg	1
4,4'-DDE	72-55-9	8081B	3.9	U	3.9	0.38	ug/kg	1
4,4'-DDT	50-29-3	8081B	3.9	U	3.9	0.33	ug/kg	1
Dieldrin	60-57-1	8081B	3.9	U	3.9	0.39	ug/kg	1
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.9	U	3.9	0.29	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.9	U	3.9	0.27	ug/kg	1
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.35	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	1
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.46	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	1
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	1
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		125	55-130
Tetrachloro-m-xylene		95	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/16/10

2

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2138	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	79	U	79	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		114	60-125
Tetrachloro-m-xylene		103	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/16/10

3

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ13004-013**
Description: **IR86-SS113-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/12/2009 1430**	% Solids: **68.0** **10/13/2009 2334**
Date Received: **10/13/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0210	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.5	U	2.5	0.50	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.5	U	2.5	0.53	ug/kg	1
alpha-BHC	319-84-6	8081B	2.5	U	2.5	0.57	ug/kg	1
beta-BHC	319-85-7	8081B	2.5	U	2.5	0.44	ug/kg	1
delta-BHC	319-86-8	8081B	2.5	U	2.5	0.47	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.5	U	2.5	0.42	ug/kg	1
gamma-Chlordane	**5103-74-2**	**8081B**	**4.3**	~~J~~	**2.5**	**0.35**	**ug/kg**	**1** 2C
4,4'-DDD	**72-54-8**	**8081B**	**3.9**	**J**	**4.8**	**0.37**	**ug/kg**	**1**
4,4'-DDE	**72-55-9**	**8081B**	**16**		**4.8**	**0.47**	**ug/kg**	**1**
4,4'-DDT	**50-29-3**	**8081B**	**15**		**4.8**	**0.41**	**ug/kg**	**1**
Dieldrin	60-57-1	8081B	4.8	U	4.8	0.48	ug/kg	1
Endosulfan I	959-98-8	8081B	2.5	U	2.5	0.50	ug/kg	1
Endosulfan II	33213-65-9	8081B	4.8	U	4.8	0.37	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	4.8	U	4.8	0.34	ug/kg	1
Endrin	72-20-8	8081B	4.8	U	4.8	0.48	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	4.8	U	4.8	0.44	ug/kg	1
Endrin ketone	53494-70-5	8081B	4.8	U	4.8	0.32	ug/kg	1
Heptachlor	76-44-8	8081B	2.5	U	2.5	0.57	ug/kg	1
Heptachlor epoxide	**1024-57-3**	**8081B**	**8.4**		**2.5**	**0.45**	**ug/kg**	**1**
Methoxychlor	72-43-5	8081B	25	U	25	2.0	ug/kg	1
Toxaphene	8001-35-2	8081B	44	U	44	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		112	55-130
Tetrachloro-m-xylene		81	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/16/10

3

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-013**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2151	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	48	U	48	1.6	ug/kg	1
Aroclor 1221	11104-28-2	8082A	98	U	98	14	ug/kg	1
Aroclor 1232	11141-16-5	8082A	48	U	48	4.8	ug/kg	1
Aroclor 1242	53469-21-9	8082A	48	U	48	3.4	ug/kg	1
Aroclor 1248	12672-29-6	8082A	48	U	48	5.6	ug/kg	1
Aroclor 1254	11097-69-1	8082A	48	U	48	2.6	ug/kg	1
Aroclor 1260	11096-82-5	8082A	48	U	48	8.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		100	60-125
Tetrachloro-m-xylene		94	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

RW
11/16/10

Organochlorine Pesticides by GC

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0225	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.39	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.42	ug/kg	1
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.45	ug/kg	1
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.35	ug/kg	1
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.37	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.28	ug/kg	1
4,4'-DDD	72-54-8	8081B	3.8	U	3.8	0.29	ug/kg	1
4,4'-DDE	72-55-9	8081B	3.8	U	3.8	0.37	ug/kg	1
4,4'-DDT	50-29-3	8081B	3.8	U	3.8	0.32	ug/kg	1
Dieldrin	60-57-1	8081B	3.8	U	3.8	0.38	ug/kg	1
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.39	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.8	U	3.8	0.29	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.8	U	3.8	0.27	ug/kg	1
Endrin	72-20-8	8081B	3.8	U	3.8	0.38	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.8	U	3.8	0.35	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.8	U	3.8	0.25	ug/kg	1
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.45	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.36	ug/kg	1
Methoxychlor	72-43-5	8081B	20	U	20	1.5	ug/kg	1
Toxaphene	8001-35-2	8081B	35	U	35	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		112	55-130
Tetrachloro-m-xylene		82	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
11/16/10

4

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2204	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	38	U	38	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	77	U	77	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	38	U	38	3.8	ug/kg	1
Aroclor 1242	53469-21-9	8082A	38	U	38	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	38	U	38	4.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	38	U	38	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	38	U	38	6.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		101	60-125
Tetrachloro-m-xylene		97	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/16/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0343	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.4	U	2.4	0.48	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.4	U	2.4	0.51	ug/kg	1
alpha-BHC	319-84-6	8081B	2.4	U	2.4	0.55	ug/kg	1
beta-BHC	319-85-7	8081B	2.4	U	2.4	0.43	ug/kg	1
delta-BHC	319-86-8	8081B	2.4	U	2.4	0.45	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.4	U	2.4	0.41	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.4	U	2.4	0.34	ug/kg	1
4,4'-DDD	72-54-8	8081B	4.7	U	4.7	0.36	ug/kg	1
4,4'-DDE	72-55-9	8081B	4.7	U	4.7	0.45	ug/kg	1
4,4'-DDT	50-29-3	8081B	4.7	U	4.7	0.40	ug/kg	1
Dieldrin	60-57-1	8081B	4.7	U	4.7	0.47	ug/kg	1
Endosulfan I	959-98-8	8081B	2.4	U	2.4	0.48	ug/kg	1
Endosulfan II	33213-65-9	8081B	4.7	U	4.7	0.36	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	4.7	U	4.7	0.33	ug/kg	1
Endrin	72-20-8	8081B	4.7	U	4.7	0.47	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	4.7	U	4.7	0.43	ug/kg	1
Endrin ketone	53494-70-5	8081B	4.7	U	4.7	0.31	ug/kg	1
Heptachlor	76-44-8	8081B	2.4	U	2.4	0.55	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.4	U	2.4	0.44	ug/kg	1
Methoxychlor	72-43-5	8081B	24	U	24	1.9	ug/kg	1
Toxaphene	8001-35-2	8081B	43	U	43	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		117	55-130
Tetrachloro-m-xylene		89	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ew
11/16/10

5

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2242	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	47	U	47	1.6	ug/kg	1
Aroclor 1221	11104-28-2	8082A	95	U	95	14	ug/kg	1
Aroclor 1232	11141-16-5	8082A	47	U	47	4.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	47	U	47	3.3	ug/kg	1
Aroclor 1248	12672-29-6	8082A	47	U	47	5.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	47	U	47	2.6	ug/kg	1
Aroclor 1260	11096-82-5	8082A	47	U	47	8.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		108	60-125
Tetrachloro-m-xylene		97	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/16/10

6

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/26/2009 0532	ASB	10/19/2009 1712	19851

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025 UJ	~~U~~	0.025	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	19	30-135
Tetrachloro-m-xylene		106	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ALJ
1/16/10

TCL Aroclors

6

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/22/2009 2332	NCM	10/19/2009 1712	19854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26 UJ	~~U~~	0.26	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.51	~~U~~	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	~~U~~	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	~~U~~	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	~~U~~	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	~~U~~	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	16	40-135
Tetrachloro-m-xylene		109	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/16/10

7

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/26/2009 0359	ASB	10/20/2009 0951	19899

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.0	U	2.0	0.40	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	2.0	U	2.0	0.43	ug/kg	1
alpha-BHC	319-84-6	8081B	2.0	U	2.0	0.46	ug/kg	1
beta-BHC	319-85-7	8081B	2.0	U	2.0	0.36	ug/kg	1
delta-BHC	319-86-8	8081B	2.0	U	2.0	0.38	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	2.0	U	2.0	0.34	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	2.0	U	2.0	0.29	ug/kg	1
4,4'-DDD	72-54-8	8081B	3.9	U	3.9	0.30	ug/kg	1
4,4'-DDE	72-55-9	8081B	3.9	U	3.9	0.38	ug/kg	1
4,4'-DDT	50-29-3	8081B	3.9	U	3.9	0.33	ug/kg	1
Dieldrin	60-57-1	8081B	3.9	U	3.9	0.39	ug/kg	1
Endosulfan I	959-98-8	8081B	2.0	U	2.0	0.40	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.9	U	3.9	0.30	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.9	U	3.9	0.27	ug/kg	1
Endrin	72-20-8	8081B	3.9	U	3.9	0.39	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.9	U	3.9	0.36	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.9	U	3.9	0.26	ug/kg	1
Heptachlor	76-44-8	8081B	2.0	U	2.0	0.46	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	2.0	U	2.0	0.37	ug/kg	1
Methoxychlor	72-43-5	8081B	20	U	20	1.6	ug/kg	1
Toxaphene	8001-35-2	8081B	36	U	36	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		112	55-130
Tetrachloro-m-xylene		79	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
1/16/10

7

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/22/2009 2254	NCM	10/20/2009 0951	19900

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	80	U	80	12	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		99	60-125
Tetrachloro-m-xylene		88	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Lw
11/16/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ13004

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB112-05-06-09D	KJ13004-011	Soil
2	IR86-SB113-02-03-09D	KJ13004-012	Soil
3	IR86-SS113-0-0.5-09D	KJ13004-013	Soil
4	IR86-SB111-01-02-09D	KJ13004-014	Soil
4MS	IR86-SB111-01-02-09DMS	KJ13004-014MS	Soil
4MSD	IR86-SB111-01-02-09DMSD	KJ13004-014MSD	Soil
5	IR86-SB110-06-07-09D	KJ13004-017	Soil
6	IR86-EB01-101209-SB	KJ13004-018	Water
6MS	IR86-EB01-101209-SBMS	KJ13004-018MS	Water
6MSD	IR86-EB01-101209-SBMSD	KJ13004-018MSD	Water
7	IR86-SS112-0-0.5-09D	KJ13004-019	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
6	Nitrobenzene-d5	36%	J/UJ - Base/neutral Cmpds
	2-Fluorobiphenyl	42%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
6	Hexachlorocyclopentadiene	26%/Ok/Ok	None - See Surrogates
	Several compounds	High RPD	None for RPD alone

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19848	bis(2-Ethylhexyl)phthalate	0.29	2.9	None	Sample >10X

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-101209-SB	bis(2-Ethylhexyl)phthalate	3.0	1000	U	3
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1838	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	340	U	340	24	ug/kg	1
Atrazine	1912-24-9	8270D	340	U	340	23	ug/kg	1
Benzaldehyde	100-52-7	8270D	340	U	340	23	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	340	U	340	13	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	340	U	340	13	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	340	U	340	30	ug/kg	1
Caprolactam	105-60-2	8270D	340	U	340	23	ug/kg	1
Carbazole	86-74-8	8270D	340	U	340	19	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	340	U	340	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	340	U	340	9.1	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	340	U	340	13	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	44	U	44	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	340	U	340	15	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	340	U	340	15	ug/kg	1
2-Chlorophenol	95-57-8	8270D	340	U	340	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	340	U	340	15	ug/kg	1
Dibenzofuran	132-64-9	8270D	340	U	340	13	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	340	U	340	48	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	340	U	340	13	ug/kg	1
Diethylphthalate	84-66-2	8270D	340	U	340	15	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	340	U	340	15	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	340	U	340	16	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	340	U	340	24	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	520	U	520	170	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	440	U	440	150	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	340	U	340	24	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	340	U	340	23	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	340	U	340	43	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	340	U	340	16	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	340	U	340	20	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	340	U	340	15	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	340	U	340	32	ug/kg	1
Hexachloroethane	67-72-1	8270D	340	U	340	12	ug/kg	1
Isophorone	78-59-1	8270D	240	U	240	9.9	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	340	U	340	13	ug/kg	1
2-Methylphenol	95-48-7	8270D	340	U	340	8.1	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	90	U	90	16	ug/kg	1
2-Nitroaniline	88-74-4	8270D	340	U	340	31	ug/kg	1
3-Nitroaniline	99-09-2	8270D	340	U	340	52	ug/kg	1
4-Nitroaniline	100-01-6	8270D	340	U	340	26	ug/kg	1
Nitrobenzene	98-95-3	8270D	340	U	340	7.2	ug/kg	1
2-Nitrophenol	88-75-5	8270D	340	U	340	24	ug/kg	1
4-Nitrophenol	100-02-7	8270D	400	U	400	130	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	340	U	340	17	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/16/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-011**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1838	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	340	U	340	12	ug/kg	1
Pentachlorophenol	87-86-5	8270D	560	U	560	190	ug/kg	1
Phenol	108-95-2	8270D	340	U	340	12	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	340	U	340	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	340	U	340	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	35-100
2-Fluorobiphenyl		60	45-105
Terphenyl-d14		70	30-125
2-Fluorophenol		62	35-105
Phenol-d5		60	40-100
2,4,6-Tribromophenol		62	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

hw
11/16/10

2

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1857	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	290	U	290	21	ug/kg	1
Atrazine	1912-24-9	8270D	290	U	290	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	290	U	290	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	290	U	290	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	26	ug/kg	1
Caprolactam	105-60-2	8270D	290	U	290	20	ug/kg	1
Carbazole	86-74-8	8270D	290	U	290	16	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.9	ug/kg	1
4-Chloroaniline	106-47-8	8270D	290	U	290	8.0	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	42	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	290	U	290	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	290	U	290	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	290	U	290	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	1
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	1
Isophorone	78-59-1	8270D	210	U	210	8.7	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	290	U	290	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	290	U	290	7.1	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	79	U	79	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	290	U	290	27	ug/kg	1
3-Nitroaniline	99-09-2	8270D	290	U	290	46	ug/kg	1
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	1
Nitrobenzene	98-95-3	8270D	290	U	290	6.4	ug/kg	1
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	1
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/16/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-012**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1857	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	490	U	490	160	ug/kg	1
Phenol	108-95-2	8270D	290	U	290	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	35-100
2-Fluorobiphenyl		58	45-105
Terphenyl-d14		59	30-125
2-Fluorophenol		56	35-105
Phenol-d5		52	40-100
2,4,6-Tribromophenol		52	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
11/16/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-013**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/09/2009 0044	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	370	U	370	26	ug/kg	1
Atrazine	1912-24-9	8270D	370	U	370	25	ug/kg	1
Benzaldehyde	**100-52-7**	**8270D**	**30**	**J**	**370**	**25**	**ug/kg**	**1**
1,1'-Biphenyl	92-52-4	8270D	370	U	370	15	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	370	U	370	14	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	370	U	370	32	ug/kg	1
Caprolactam	105-60-2	8270D	370	U	370	25	ug/kg	1
Carbazole	86-74-8	8270D	370	U	370	21	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	370	U	370	12	ug/kg	1
4-Chloroaniline	106-47-8	8270D	370	U	370	10	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	370	U	370	15	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	48	U	48	13	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	370	U	370	16	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	370	U	370	16	ug/kg	1
2-Chlorophenol	95-57-8	8270D	370	U	370	13	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	370	U	370	16	ug/kg	1
Dibenzofuran	132-64-9	8270D	370	U	370	15	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	370	U	370	53	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	370	U	370	15	ug/kg	1
Diethylphthalate	84-66-2	8270D	370	U	370	16	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	370	U	370	16	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	370	U	370	18	ug/kg	1
Di-n-butyl phthalate	**84-74-2**	**8270D**	**30**	**J**	**370**	**26**	**ug/kg**	**1**
4,6-Dinitro-2-methylphenol	534-52-1	8270D	570	U	570	190	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	480	U	480	160	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	370	U	370	26	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	370	U	370	25	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	370	U	370	47	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	370 ~~23~~	U	**370**	**18**	**ug/kg**	1 EBL
Hexachlorobenzene	118-74-1	8270D	370	U	370	22	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	370	U	370	16	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	370	U	370	35	ug/kg	1
Hexachloroethane	67-72-1	8270D	370	U	370	13	ug/kg	1
Isophorone	78-59-1	8270D	260	U	260	11	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	370	U	370	15	ug/kg	1
2-Methylphenol	95-48-7	8270D	370	U	370	8.8	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	98	U	98	18	ug/kg	1
2-Nitroaniline	88-74-4	8270D	370	U	370	34	ug/kg	1
3-Nitroaniline	99-09-2	8270D	370	U	370	57	ug/kg	1
4-Nitroaniline	100-01-6	8270D	370	U	370	28	ug/kg	1
Nitrobenzene	98-95-3	8270D	370	U	370	7.9	ug/kg	1
2-Nitrophenol	88-75-5	8270D	370	U	370	26	ug/kg	1
4-Nitrophenol	100-02-7	8270D	440	U	440	140	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	370	U	370	19	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/16/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-013**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/09/2009 0044	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	370	U	370	13	ug/kg	1
Pentachlorophenol	87-86-5	8270D	620	U	620	210	ug/kg	1
Phenol	108-95-2	8270D	370	U	370	13	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	370	U	370	14	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	370	U	370	14	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		49	35-100
2-Fluorobiphenyl		62	45-105
Terphenyl-d14		66	30-125
2-Fluorophenol		51	35-105
Phenol-d5		54	40-100
2,4,6-Tribromophenol		80	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
11/16/10

4

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1916	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	290	U	290	21	ug/kg	1
Atrazine	1912-24-9	8270D	290	U	290	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	290	U	290	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	290	U	290	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	12	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	26	ug/kg	1
Caprolactam	105-60-2	8270D	290	U	290	20	ug/kg	1
Carbazole	86-74-8	8270D	290	U	290	16	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.9	ug/kg	1
4-Chloroaniline	106-47-8	8270D	290	U	290	8.0	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	42	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	290	U	290	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	290	U	290	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	290	U	290	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	1
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	1
Isophorone	78-59-1	8270D	210	U	210	8.7	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	290	U	290	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	290	U	290	7.1	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	79	U	79	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	290	U	290	27	ug/kg	1
3-Nitroaniline	99-09-2	8270D	290	U	290	46	ug/kg	1
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	1
Nitrobenzene	98-95-3	8270D	290	U	290	6.3	ug/kg	1
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	1
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WS
1/16/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-014**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 1916	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	490	U	490	160	ug/kg	1
Phenol	108-95-2	8270D	290	U	290	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		54	35-100
2-Fluorobiphenyl		60	45-105
Terphenyl-d14		60	30-125
2-Fluorophenol		58	35-105
Phenol-d5		55	40-100
2,4,6-Tribromophenol		57	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AEW
1/16/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2013	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	350	U	350	25	ug/kg	1
Atrazine	1912-24-9	8270D	350	U	350	24	ug/kg	1
Benzaldehyde	100-52-7	8270D	350	U	350	24	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	350	U	350	14	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	350	U	350	14	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	350	U	350	31	ug/kg	1
Caprolactam	105-60-2	8270D	350	U	350	24	ug/kg	1
Carbazole	86-74-8	8270D	350	U	350	20	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	350	U	350	12	ug/kg	1
4-Chloroaniline	106-47-8	8270D	350	U	350	9.6	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	350	U	350	14	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	47	U	47	13	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	350	U	350	16	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	350	U	350	16	ug/kg	1
2-Chlorophenol	95-57-8	8270D	350	U	350	13	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	350	U	350	16	ug/kg	1
Dibenzofuran	132-64-9	8270D	350	U	350	14	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	350	U	350	51	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	350	U	350	14	ug/kg	1
Diethylphthalate	84-66-2	8270D	350	U	350	16	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	350	U	350	16	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	350	U	350	17	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	350	U	350	25	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	550	U	550	180	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	470	U	470	160	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	350	U	350	25	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	350	U	350	24	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	350	U	350	45	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	350	U	350	17	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	350	U	350	21	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	350	U	350	16	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	350	U	350	34	ug/kg	1
Hexachloroethane	67-72-1	8270D	350	U	350	13	ug/kg	1
Isophorone	78-59-1	8270D	250	U	250	10	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	350	U	350	14	ug/kg	1
2-Methylphenol	95-48-7	8270D	350	U	350	8.5	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	95	U	95	17	ug/kg	1
2-Nitroaniline	88-74-4	8270D	350	U	350	32	ug/kg	1
3-Nitroaniline	99-09-2	8270D	350	U	350	55	ug/kg	1
4-Nitroaniline	100-01-6	8270D	350	U	350	27	ug/kg	1
Nitrobenzene	98-95-3	8270D	350	U	350	7.6	ug/kg	1
2-Nitrophenol	88-75-5	8270D	350	U	350	25	ug/kg	1
4-Nitrophenol	100-02-7	8270D	420	U	420	140	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	350	U	350	18	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/16/10

5

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-017**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2013	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	350	U	350	12	ug/kg	1
Pentachlorophenol	87-86-5	8270D	590	U	590	200	ug/kg	1
Phenol	108-95-2	8270D	350	U	350	13	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	350	U	350	13	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	350	U	350	14	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		52	35-100
2-Fluorobiphenyl		56	45-105
Terphenyl-d14		65	30-125
2-Fluorophenol		55	35-105
Phenol-d5		54	40-100
2,4,6-Tribromophenol		61	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/16/10

6

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**
Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/07/2009 2110	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10 UJ	U	10	0.33	ug/L	1 SSL
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2 UJ	U	5.2	0.23	ug/L	1 SSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2 UJ	U	5.2	0.21	ug/L	1 SSL
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0 UJ	U	1.0	0.14	ug/L	1 SSL
Dimethyl phthalate	131-11-3	8270D	5.2 UJ	U	5.2	0.11	ug/L	1 SSL
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2 UJ	U	5.2	0.062	ug/L	1 SSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1 UJ	U	2.1	0.26	ug/L	1 SSL
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**3.0 J**		**5.2**	**0.11**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.0 UJ	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1 UJ	U	2.1	0.34	ug/L	1 SSL
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2 UJ	U	5.2	0.21	ug/L	1 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/16/10

6

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-018**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/07/2009 2110	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	UJ ~~U~~	5.2	0.25	ug/L	1 SSL
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	36	40-110
2-Fluorobiphenyl	N	42	50-110
Terphenyl-d14		55	50-135
2-Fluorophenol		33	20-110
Phenol-d5		35	10-115
2,4,6-Tribromophenol		53	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

ne
1/18/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2032	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	290	U	290	21	ug/kg	1
Atrazine	1912-24-9	8270D	290	U	290	20	ug/kg	1
Benzaldehyde	100-52-7	8270D	290	U	290	20	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	290	U	290	12	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	11	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	26	ug/kg	1
Caprolactam	105-60-2	8270D	290	U	290	20	ug/kg	1
Carbazole	86-74-8	8270D	290	U	290	16	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.9	ug/kg	1
4-Chloroaniline	106-47-8	8270D	290	U	290	8.0	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	12	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	39	U	39	11	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	1
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	1
Dibenzofuran	132-64-9	8270D	290	U	290	12	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	42	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	12	ug/kg	1
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	460	U	460	150	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	390	U	390	130	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	20	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	290	U	290	38	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	290	U	290	14	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	290	U	290	18	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	28	ug/kg	1
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	1
Isophorone	78-59-1	8270D	210	U	210	8.7	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	290	U	290	12	ug/kg	1
2-Methylphenol	95-48-7	8270D	290	U	290	7.0	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	79	U	79	14	ug/kg	1
2-Nitroaniline	88-74-4	8270D	290	U	290	27	ug/kg	1
3-Nitroaniline	99-09-2	8270D	290	U	290	46	ug/kg	1
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	1
Nitrobenzene	98-95-3	8270D	290	U	290	6.3	ug/kg	1
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	1
4-Nitrophenol	100-02-7	8270D	350	U	350	110	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

11/16/10

7

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-019**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2032	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290	U	290	10	ug/kg	1
Pentachlorophenol	87-86-5	8270D	490	U	490	160	ug/kg	1
Phenol	108-95-2	8270D	290	U	290	11	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	35-100
2-Fluorobiphenyl		59	45-105
Terphenyl-d14		64	30-125
2-Fluorophenol		56	35-105
Phenol-d5		54	40-100
2,4,6-Tribromophenol		70	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WD
1/16/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ13004

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB111-01-02-09D	KJ13004-001	Soil
1MS	IR86-SB111-01-02-09DMS	KJ13004-001MS	Soil
1MSD	IR86-SB111-01-02-09DMSD	KJ13004-001MSD	Soil
2	IR86-TB01-101209	KJ13004-004	Water
3	IR86-SB110-06-07-09D	KJ13004-005	Soil
3RE	IR86-SB110-06-07-09DRE	KJ13004-005RE	Soil
4	IR86-EB01-101209-SB	KJ13004-006	Water
5	IR86-SS112-0-0.5-09D	KJ13004-007	Soil
5RE	IR86-SS112-0-0.5-09DRE	KJ13004-007RE	Soil
6	IR86-SB112-05-06-09D	KJ13004-008	Soil
7	IR86-SB113-02-03-09D	KJ13004-009	Soil
7RE	IR86-SB113-02-03-09DRE	KJ13004-009RE	Soil
8	IR86-SS113-0-0.5-09D	KJ13004-010	Soil
8RE	IR86-SS113-0-0.5-09DRE	KJ13004-010RE	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/13/09 (0929)	Bromomethane	28.41%	None	See Surrogates
	2-Butanone	0.049 RRF	J/R	3, 5RE, 7, 8
10/13/09 (2351)	Bromomethane	31.77%	J/UJ	1, 6
10/14/09	2-Hexanone	26.22%	J/UJ	2, 4

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
3	Bromofluorobenzene	77%	J/UJ - Unless already qualified
3RE	Bromofluorobenzene	80%	J/UJ
5	Bromofluorobenzene	70%	J/UJ
5RE	Toluene-d8	73%	J/UJ - Unless already qualified
	Bromofluorobenzene	54%	
7	Toluene-d8	83%	J/UJ - Unless already qualified
	Bromofluorobenzene	64%	
7RE	Bromofluorobenzene	75%	J/UJ
8	Bromofluorobenzene	55%	J/UJ - Unless already qualified
8RE	Bromofluorobenzene	74%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	1,2-Dibromoethane (EDB)	67%/Ok/Ok	J/UJ
	trans-1,3-Dichloropropane	66%/Ok/Ok	
	cis-1,3-Dichloropropene	66%/Ok/Ok	
	Methyl tertiary butyl ether	71%/Ok/Ok	
	4-Methyl-2-pentanone	55%/Ok/Ok	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19582	1,2-Dibromoethane (EDB)	79%	J/UJ	2, 4

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
5RE	Pentafluorobenzene	Low	None - See Surrogates
	1,4-Difluorobenzene		
	Chlorobenzene-d5		
	1,4-Dichlorobenzene-d4		
7	Pentafluorobenzene	Low	None - See Surrogates

Sample ID	Internal Standard	Area Count	Qualifier
7RE	Pentafluorobenzene	Low	None - See Surrogates
	1,4-Difluorobenzene		
	Chlorobenzene-d5		
	1,4-Dichlorobenzene-d4		
8	Pentafluorobenzene	Low	J/UJ
	1,4-Difluorobenzene		
	Chlorobenzene-d5		
	1,4-Dichlorobenzene-d4	Severely Low	J/R
8RE	1,4-Dichlorobenzene-d4	Low	None - See Surrogates

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L or ug/kg	Qualifier	Affected Samples
IR86-TB01-101209	None - ND	-	-	-	-
IR86-EB01-101209-SB	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Many samples exhibited poor surrogate and/or internal standard recoveries. These samples were reanalyzed with similar results. See the Form Is for which sample results to use for reporting.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-001**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/14/2009 0517	MZ		19662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	28	U	28	2.5	ug/kg	2
Benzene	71-43-2	8260B	7.0	U	7.0	1.5	ug/kg	2
Bromodichloromethane	75-27-4	8260B	70	U	70	1.5	ug/kg	2
Bromoform	75-25-2	8260B	14	U	14	0.98	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	14	UJ ✓	14	2.5	ug/kg	2 CCH
2-Butanone (MEK)	78-93-3	8260B	14	U	14	3.4	ug/kg	2
Carbon disulfide	75-15-0	8260B	7.0	U	7.0	1.8	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	7.0	U	7.0	2.5	ug/kg	2
Chlorobenzene	108-90-7	8260B	7.0	U	7.0	2.1	ug/kg	2
Chloroethane	75-00-3	8260B	7.0	U	7.0	1.8	ug/kg	2
Chloroform	67-66-3	8260B	7.0	U	7.0	1.2	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	7.0	U	7.0	1.4	ug/kg	2
Cyclohexane	110-82-7	8260B	7.0	U	7.0	0.94	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	7.0	U	7.0	2.1	ug/kg	2
Dibromochloromethane	124-48-1	8260B	7.0	U	7.0	0.88	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	7.0	UJ ✓	7.0	1.2	ug/kg	2 MSL
1,2-Dichlorobenzene	95-50-1	8260B	7.0	U	7.0	1.3	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	7.0	U	7.0	1.8	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	7.0	U	7.0	2.1	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	7.0	U	7.0	2.2	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	7.0	U	7.0	1.0	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	7.0	U	7.0	1.4	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	7.0	U	7.0	2.4	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	7.0	U	7.0	1.1	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	7.0	U	7.0	2.1	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	7.0	U	7.0	1.3	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	7.0	UJ ✓	7.0	0.95	ug/kg	2 MSL
trans-1,3-Dichloropropene	10061-02-6	8260B	7.0	UJ ✓	7.0	1.1	ug/kg	2 MSL
Ethylbenzene	100-41-4	8260B	7.0	U	7.0	1.5	ug/kg	2
2-Hexanone	591-78-6	8260B	14	U	14	1.8	ug/kg	2
Isopropylbenzene	98-82-8	8260B	7.0	U	7.0	1.1	ug/kg	2
Methyl acetate	79-20-9	8260B	7.0	U	7.0	0.94	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	7.0	UJ ✓	7.0	0.56	ug/kg	2 MSL
4-Methyl-2-pentanone	108-10-1	8260B	14	UJ ✓	14	2.1	ug/kg	2 MSL
Methylcyclohexane	108-87-2	8260B	7.0	U	7.0	0.85	ug/kg	2
Methylene chloride	75-09-2	8260B	7.0	U	7.0	3.6	ug/kg	2
Styrene	100-42-5	8260B	7.0	U	7.0	1.5	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	7.0	U	7.0	0.66	ug/kg	2
Tetrachloroethene	127-18-4	8260B	7.0	U	7.0	3.2	ug/kg	2
Toluene	108-88-3	8260B	7.0	U	7.0	2.0	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	7.0	U	7.0	2.9	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	7.0	U	7.0	1.4	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	7.0	U	7.0	1.2	ug/kg	2
1,1,2-Trichloroethane	79-00-5	8260B	7.0	U	7.0	1.1	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
1/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB111-01-02-09D**
Date Sampled: **10/12/2009 0845**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-001**
Matrix: **Solid**
% Solids: **85.1** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/14/2009 0517	MZ		19662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	7.0	U	7.0	2.7	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	7.0	U	7.0	2.1	ug/kg	2
Vinyl chloride	75-01-4	8260B	7.0	U	7.0	1.2	ug/kg	2
Xylenes (total)	1330-20-7	8260B	7.0	U	7.0	4.0	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		87	85-120
1,2-Dichloroethane-d4		91	53-142
Toluene-d8		108	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/16/10

.2

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101209**
Date Sampled: **10/12/2009**
Date Received: **10/13/2009**
Laboratory ID: **KJ13004-004**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1447	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ ~~U~~	0.50	0.061	ug/L	1	BSL
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/16/10

2

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101209**
Date Sampled: **10/12/2009**
Date Received: **10/13/2009**
Laboratory ID: **KJ13004-004**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1447	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120
Toluene-d8		116	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/16/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-005**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1813	MZ		19569
2	5035	8260B	1	10/21/2009 1801	DLB		19991

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	27 UJ	U	27	2.4	ug/kg	1 SSL
Benzene	71-43-2	8260B	6.8	U	6.8	1.5	ug/kg	1
Bromodichloromethane	75-27-4	8260B	68	U	68	1.5	ug/kg	1
Bromoform	75-25-2	8260B	14	U	14	0.95	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	14	U	14	2.4	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	14 R	U	14	3.3	ug/kg	1 CC
Carbon disulfide	75-15-0	8260B	6.8 UJ	U	6.8	1.8	ug/kg	1 SSL
Carbon tetrachloride	56-23-5	8260B	6.8	U	6.8	2.4	ug/kg	1
Chlorobenzene	108-90-7	8260B	6.8	U	6.8	2.0	ug/kg	1
Chloroethane	75-00-3	8260B	6.8	U	6.8	1.8	ug/kg	1
Chloroform	67-66-3	8260B	6.8	U	6.8	1.1	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	6.8	U	6.8	1.4	ug/kg	1
Cyclohexane	110-82-7	8260B	6.8	U	6.8	0.91	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	6.8	U	6.8	2.0	ug/kg	1
Dibromochloromethane	124-48-1	8260B	6.8	U	6.8	0.85	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	6.8	U	6.8	1.2	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	6.8	U	6.8	1.3	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	6.8	U	6.8	1.8	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	6.8	U	6.8	2.0	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	6.8	U	6.8	2.2	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	6.8	U	6.8	0.99	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	6.8	U	6.8	1.4	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	6.8	U	6.8	2.3	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	6.8	U	6.8	1.0	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	6.8	U	6.8	2.0	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	6.8	U	6.8	1.2	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	6.8	U	6.8	0.92	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	6.8	U	6.8	1.1	ug/kg	1
Ethylbenzene	100-41-4	8260B	6.8	U	6.8	1.5	ug/kg	1
2-Hexanone	591-78-6	8260B	14	U	14	1.8	ug/kg	1
Isopropylbenzene	98-82-8	8260B	6.8	U	6.8	1.1	ug/kg	1
Methyl acetate	79-20-9	8260B	6.8	U	6.8	0.91	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.8	U	6.8	0.54	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	14	U	14	2.0	ug/kg	1
Methylcyclohexane	108-87-2	8260B	6.8	U	6.8	0.83	ug/kg	1
Methylene chloride	75-09-2	8260B	6.8	U	6.8	3.5	ug/kg	1
Styrene	100-42-5	8260B	6.8	U	6.8	1.5	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	6.8	U	6.8	0.64	ug/kg	1
Tetrachloroethene	127-18-4	8260B	6.8	U	6.8	3.1	ug/kg	1
Toluene	108-88-3	8260B	6.8	U	6.8	1.9	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	6.8	U	6.8	2.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	6.8	U	6.8	1.4	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	6.8	U	6.8	1.2	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WEJ
11/16/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-005**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1813	MZ		19569
2	5035	8260B	1	10/21/2009 1801	DLB		19991

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	6.8	UJ U	6.8	1.1	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	6.8	U	6.8	2.6	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	6.8	U	6.8	2.0	ug/kg	1
Vinyl chloride	75-01-4	8260B	6.8	U	6.8	1.2	ug/kg	1
Xylenes (total)	1330-20-7	8260B	6.8	U	6.8	3.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	77	85-120	N	80	85-120
1,2-Dichloroethane-d4		87	53-142		94	53-142
Toluene-d8		98	85-115		94	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
1/16/10

3RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-005**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1813	MZ		19569
2	5035	8260B	1	10/21/2009 1801	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	22 UJ	U	22	2.0	ug/kg	2 SSL
Benzene	71-43-2	8260B	5.6	U	5.6	1.2	ug/kg	2
Bromodichloromethane	75-27-4	8260B	56	U	56	1.2	ug/kg	2
Bromoform	75-25-2	8260B	11	U	11	0.78	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	11	U	11	2.0	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	11	U	11	2.7	ug/kg	2
Carbon disulfide	75-15-0	8260B	5.6	U	5.6	1.5	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	5.6	U	5.6	2.0	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.6	U	5.6	1.7	ug/kg	2
Chloroethane	75-00-3	8260B	5.6	U	5.6	1.5	ug/kg	2
Chloroform	67-66-3	8260B	5.6	U	5.6	0.93	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.6	U	5.6	1.1	ug/kg	2
Cyclohexane	110-82-7	8260B	5.6	U	5.6	0.75	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.6	U	5.6	1.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.6	U	5.6	0.70	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.6	U	5.6	0.95	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.6	U	5.6	1.0	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.6	U	5.6	1.5	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.6	U	5.6	1.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.6	U	5.6	1.8	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.6	U	5.6	0.81	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.6	U	5.6	1.1	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.6	U	5.6	1.9	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.6	U	5.6	0.85	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.6	U	5.6	1.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.6	U	5.6	1.0	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.6	U	5.6	0.76	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.6	U	5.6	0.91	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.6	U	5.6	1.2	ug/kg	2
2-Hexanone	591-78-6	8260B	11	U	11	1.5	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.6	U	5.6	0.89	ug/kg	2
Methyl acetate	79-20-9	8260B	5.6	U	5.6	0.75	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.6	U	5.6	0.45	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	11	U	11	1.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.6	U	5.6	0.68	ug/kg	2
Methylene chloride	75-09-2	8260B	5.6	U	5.6	2.9	ug/kg	2
Styrene	100-42-5	8260B	5.6	U	5.6	1.2	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.6	U	5.6	0.52	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.6	U	5.6	2.6	ug/kg	2
Toluene	108-88-3	8260B	5.6	U	5.6	1.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.6	U	5.6	2.3	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.6	U	5.6	1.1	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.6	U	5.6	0.95	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
1/16/10

3RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB110-06-07-09D**
Date Sampled: **10/12/2009 0930**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-005**
Matrix: **Solid**
% Solids: **69.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1813	MZ		19569
2	5035	8260B	1	10/21/2009 1801	DLB		19991

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.6 UJ	U	5.6	0.88	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	5.6	U	5.6	2.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.6	U	5.6	1.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.6	U	5.6	0.96	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.6	U	5.6	3.2	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	77	85-120	N	80	85-120
1,2-Dichloroethane-d4		87	53-142		94	53-142
Toluene-d8		98	85-115		94	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW
1/16/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-006**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1508	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ ~~U~~	0.50	0.061	ug/L	1	BSL
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew 1/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101209-SB**
Date Sampled: **10/12/2009 1015**
Date Received: **10/13/2009**
Laboratory ID: **KJ13004-006**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1508	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120
Toluene-d8		114	85-120
Bromofluorobenzene		105	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WD
1/16/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-007**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0604	MZ		19609
2	5035	8260B	1	10/13/2009 1837	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**6.7** J	J	**20**	**1.8**	**ug/kg**	**1** SSL
Benzene	71-43-2	8260B	4.9 UJ	U	4.9	1.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	49	U	49	1.1	ug/kg	1
Bromoform	75-25-2	8260B	9.9	U	9.9	0.69	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.9	U	9.9	1.8	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.9	U	9.9	2.4	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.9	U	4.9	1.3	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.9	U	4.9	1.8	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.9	U	4.9	1.5	ug/kg	1
Chloroethane	75-00-3	8260B	4.9	U	4.9	1.3	ug/kg	1
Chloroform	67-66-3	8260B	4.9	U	4.9	0.82	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.9	U	4.9	0.99	ug/kg	1
Cyclohexane	110-82-7	8260B	4.9	U	4.9	0.67	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.9	U	4.9	1.5	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.9	U	4.9	0.62	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.9	U	4.9	0.84	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.9	U	4.9	0.92	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.9	U	4.9	1.3	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.9	U	4.9	1.5	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.9	U	4.9	1.6	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.9	U	4.9	0.72	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.9	U	4.9	0.99	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.9	U	4.9	1.7	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.9	U	4.9	0.75	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.9	U	4.9	1.5	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.9	U	4.9	0.90	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.9	U	4.9	0.67	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.9	U	4.9	0.81	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.9	U	4.9	1.1	ug/kg	1
2-Hexanone	591-78-6	8260B	9.9	U	9.9	1.3	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.9	U	4.9	0.79	ug/kg	1
Methyl acetate	79-20-9	8260B	4.9	U	4.9	0.66	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.9	U	4.9	0.40	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.9	U	9.9	1.5	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.9	U	4.9	0.60	ug/kg	1
Methylene chloride	75-09-2	8260B	4.9	U	4.9	2.6	ug/kg	1
Styrene	100-42-5	8260B	4.9	U	4.9	1.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.9	U	4.9	0.46	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.9	U	4.9	2.3	ug/kg	1
Toluene	108-88-3	8260B	4.9	U	4.9	1.4	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.9	U	4.9	2.1	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.9	U	4.9	0.99	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.9	U	4.9	0.84	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
1/16/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-007**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0604	MZ		19609
2	5035	8260B	1	10/13/2009 1837	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.9 UJ	U	4.9	0.78	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	4.9	U	4.9	1.9	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.9	U	4.9	1.5	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.9	U	4.9	0.85	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.9	U	4.9	2.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	70	85-120	N	54	85-120
1,2-Dichloroethane-d4		80	53-142		67	53-142
Toluene-d8		93	85-115	N	73	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ND
1/16/10

5RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-007**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0604	MZ		19609
2	5035	8260B	1	10/13/2009 1837	MZ		20358

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	20 UJ	U	20	1.8	ug/kg	2 SSL
Benzene	71-43-2	8260B	5.0	U	5.0	1.1	ug/kg	2
Bromodichloromethane	75-27-4	8260B	50	U	50	1.1	ug/kg	2
Bromoform	75-25-2	8260B	10	U	10	0.71	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	10	U	10	1.8	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	10 R	U	10	2.4	ug/kg	2 CC
Carbon disulfide	75-15-0	8260B	5.0 UJ	U	5.0	1.3	ug/kg	2 SSL
Carbon tetrachloride	56-23-5	8260B	5.0	U	5.0	1.8	ug/kg	2
Chlorobenzene	108-90-7	8260B	5.0	U	5.0	1.5	ug/kg	2
Chloroethane	75-00-3	8260B	5.0	U	5.0	1.3	ug/kg	2
Chloroform	67-66-3	8260B	5.0	U	5.0	0.84	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.0	U	5.0	1.0	ug/kg	2
Cyclohexane	110-82-7	8260B	5.0	U	5.0	0.68	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	5.0	U	5.0	1.5	ug/kg	2
Dibromochloromethane	124-48-1	8260B	5.0	U	5.0	0.63	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	5.0	U	5.0	0.86	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	5.0	U	5.0	0.94	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	5.0	U	5.0	1.3	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	5.0	U	5.0	1.5	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	5.0	U	5.0	1.6	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	5.0	U	5.0	0.74	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	5.0	U	5.0	1.0	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	5.0	U	5.0	1.7	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	5.0	U	5.0	0.77	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.0	U	5.0	1.5	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	5.0	U	5.0	0.92	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	5.0	U	5.0	0.68	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	5.0	U	5.0	0.83	ug/kg	2
Ethylbenzene	100-41-4	8260B	5.0	U	5.0	1.1	ug/kg	2
2-Hexanone	591-78-6	8260B	10	U	10	1.3	ug/kg	2
Isopropylbenzene	98-82-8	8260B	5.0	U	5.0	0.81	ug/kg	2
Methyl acetate	79-20-9	8260B	5.0	U	5.0	0.67	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.0	U	5.0	0.40	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	10	U	10	1.5	ug/kg	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.61	ug/kg	2
Methylene chloride	75-09-2	8260B	5.0	U	5.0	2.6	ug/kg	2
Styrene	100-42-5	8260B	5.0	U	5.0	1.1	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	5.0	U	5.0	0.47	ug/kg	2
Tetrachloroethene	127-18-4	8260B	5.0	U	5.0	2.3	ug/kg	2
Toluene	108-88-3	8260B	5.0	U	5.0	1.4	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.0	U	5.0	2.1	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	5.0	U	5.0	1.0	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	5.0	U	5.0	0.86	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WJ
1/16/10

5RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS112-0-0.5-09D**
Date Sampled: **10/12/2009 1145**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-007**
Matrix: **Solid**
% Solids: **83.9** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0604	MZ		19609
2	5035	8260B	1	10/13/2009 1837	MZ		20358

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.0 UJ	U	5.0	0.80	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	5.0	U	5.0	1.9	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	5.0	U	5.0	1.5	ug/kg	2
Vinyl chloride	75-01-4	8260B	5.0	U	5.0	0.87	ug/kg	2
Xylenes (total)	1330-20-7	8260B	5.0	U	5.0	2.9	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	70	85-120	N	54	85-120
1,2-Dichloroethane-d4		80	53-142		67	53-142
Toluene-d8		93	85-115	N	73	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
11/6/10

Volatile Organic Compounds by GC/MS

6

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-008**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0627	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**2.5**	**J**	**27**	**2.4**	**ug/kg**	**1**
Benzene	71-43-2	8260B	6.7	U	6.7	1.5	ug/kg	1
Bromodichloromethane	75-27-4	8260B	67	U	67	1.5	ug/kg	1
Bromoform	75-25-2	8260B	13	U	13	0.94	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	13 UJ	U	13	2.4	ug/kg	1 CCH
2-Butanone (MEK)	78-93-3	8260B	13	U	13	3.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	6.7	U	6.7	1.7	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	6.7	U	6.7	2.4	ug/kg	1
Chlorobenzene	108-90-7	8260B	6.7	U	6.7	2.0	ug/kg	1
Chloroethane	75-00-3	8260B	6.7	U	6.7	1.7	ug/kg	1
Chloroform	67-66-3	8260B	6.7	U	6.7	1.1	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	6.7	U	6.7	1.3	ug/kg	1
Cyclohexane	110-82-7	8260B	6.7	U	6.7	0.91	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	6.7	U	6.7	2.0	ug/kg	1
Dibromochloromethane	124-48-1	8260B	6.7	U	6.7	0.85	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	6.7	U	6.7	1.1	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	6.7	U	6.7	1.3	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	6.7	U	6.7	1.7	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	6.7	U	6.7	2.0	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	6.7	U	6.7	2.2	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	6.7	U	6.7	0.98	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	6.7	U	6.7	1.3	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	6.7	U	6.7	2.3	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	6.7	U	6.7	1.0	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	6.7	U	6.7	2.0	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	6.7	U	6.7	1.2	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	6.7	U	6.7	0.92	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	6.7	U	6.7	1.1	ug/kg	1
Ethylbenzene	100-41-4	8260B	6.7	U	6.7	1.5	ug/kg	1
2-Hexanone	591-78-6	8260B	13	U	13	1.7	ug/kg	1
Isopropylbenzene	98-82-8	8260B	6.7	U	6.7	1.1	ug/kg	1
Methyl acetate	79-20-9	8260B	6.7	U	6.7	0.90	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.7	U	6.7	0.54	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	13	U	13	2.0	ug/kg	1
Methylcyclohexane	108-87-2	8260B	6.7	U	6.7	0.82	ug/kg	1
Methylene chloride	75-09-2	8260B	6.7	U	6.7	3.5	ug/kg	1
Styrene	100-42-5	8260B	6.7	U	6.7	1.5	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	6.7	U	6.7	0.63	ug/kg	1
Tetrachloroethene	127-18-4	8260B	6.7	U	6.7	3.1	ug/kg	1
Toluene	108-88-3	8260B	6.7	U	6.7	1.9	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	6.7	U	6.7	2.8	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	6.7	U	6.7	1.3	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	6.7	U	6.7	1.1	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	6.7	U	6.7	1.1	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
1/16/10

6

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB112-05-06-09D**
Date Sampled: **10/12/2009 1400**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-008**
Matrix: **Solid**
% Solids: **73.3** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/14/2009 0627	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	6.7	U	6.7	2.6	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	6.7	U	6.7	2.0	ug/kg	1
Vinyl chloride	75-01-4	8260B	6.7	U	6.7	1.2	ug/kg	1
Xylenes (total)	1330-20-7	8260B	6.7	U	6.7	3.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		88	85-120
1,2-Dichloroethane-d4		92	53-142
Toluene-d8		108	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/16/10

7

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-009**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1924	MZ		19569
2	5035	8260B	1	10/14/2009 0651	MZ		19609

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	19 UJ	U	19	1.7	ug/kg	1 SSL
Benzene	71-43-2	8260B	4.8	U	4.8	1.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	48	U	48	1.1	ug/kg	1
Bromoform	75-25-2	8260B	9.6	U	9.6	0.67	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.6	U	9.6	1.7	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.6 R	U	9.6	2.3	ug/kg	1 CC
Carbon disulfide	75-15-0	8260B	4.8 UJ	U	4.8	1.2	ug/kg	1 SSL
Carbon tetrachloride	56-23-5	8260B	4.8	U	4.8	1.7	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.8	U	4.8	1.4	ug/kg	1
Chloroethane	75-00-3	8260B	4.8	U	4.8	1.2	ug/kg	1
Chloroform	67-66-3	8260B	4.8	U	4.8	0.79	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.8	U	4.8	0.96	ug/kg	1
Cyclohexane	110-82-7	8260B	4.8	U	4.8	0.64	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.8	U	4.8	1.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.8	U	4.8	0.60	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.8	U	4.8	0.81	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.8	U	4.8	0.89	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.8	U	4.8	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.8	U	4.8	1.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.8	U	4.8	1.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.8	U	4.8	0.70	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.8	U	4.8	0.96	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.8	U	4.8	1.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.8	U	4.8	0.73	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.8	U	4.8	1.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.8	U	4.8	0.87	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.8	U	4.8	0.65	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.8	U	4.8	0.78	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.8	U	4.8	1.1	ug/kg	1
2-Hexanone	591-78-6	8260B	9.6	U	9.6	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.8	U	4.8	0.77	ug/kg	1
Methyl acetate	79-20-9	8260B	4.8	U	4.8	0.64	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.8	U	4.8	0.38	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.6	U	9.6	1.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.8	U	4.8	0.58	ug/kg	1
Methylene chloride	75-09-2	8260B	4.8	U	4.8	2.5	ug/kg	1
Styrene	100-42-5	8260B	4.8	U	4.8	1.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.8	U	4.8	0.45	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.8	U	4.8	2.2	ug/kg	1
Toluene	108-88-3	8260B	4.8	U	4.8	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.8	U	4.8	2.0	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.8	U	4.8	0.96	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.8	U	4.8	0.81	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kW
1/16/10

7

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-009**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1924	MZ		19569
2	5035	8260B	1	10/14/2009 0651	MZ		19609

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.8	UJ U	4.8	0.76	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	4.8	U	4.8	1.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.8	U	4.8	1.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.8	U	4.8	0.82	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.8	U	4.8	2.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	64	85-120	N	75	85-120
1,2-Dichloroethane-d4		76	53-142		87	53-142
Toluene-d8	N	83	85-115		99	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

11/16/10

7RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-009**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1924	MZ		19569
2	5035	8260B	1	10/14/2009 0651	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	18 UJ	U	18	1.7	ug/kg	2 SSL
Benzene	71-43-2	8260B	4.6	U	4.6	1.0	ug/kg	2
Bromodichloromethane	75-27-4	8260B	46	U	46	1.0	ug/kg	2
Bromoform	75-25-2	8260B	9.2	U	9.2	0.64	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	9.2	U	9.2	1.7	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	9.2	U	9.2	2.2	ug/kg	2
Carbon disulfide	75-15-0	8260B	4.6	U	4.6	1.2	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	4.6	U	4.6	1.7	ug/kg	2
Chlorobenzene	108-90-7	8260B	4.6	U	4.6	1.4	ug/kg	2
Chloroethane	75-00-3	8260B	4.6	U	4.6	1.2	ug/kg	2
Chloroform	67-66-3	8260B	4.6	U	4.6	0.76	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	4.6	U	4.6	0.92	ug/kg	2
Cyclohexane	110-82-7	8260B	4.6	U	4.6	0.62	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.6	U	4.6	1.4	ug/kg	2
Dibromochloromethane	124-48-1	8260B	4.6	U	4.6	0.58	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.6	U	4.6	0.78	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	4.6	U	4.6	0.86	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	4.6	U	4.6	1.2	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	4.6	U	4.6	1.4	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	4.6	U	4.6	1.5	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	4.6	U	4.6	0.67	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	4.6	U	4.6	0.92	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	4.6	U	4.6	1.6	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	4.6	U	4.6	0.70	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	4.6	U	4.6	1.4	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	4.6	U	4.6	0.84	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	4.6	U	4.6	0.63	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	4.6	U	4.6	0.76	ug/kg	2
Ethylbenzene	100-41-4	8260B	4.6	U	4.6	1.0	ug/kg	2
2-Hexanone	591-78-6	8260B	9.2	U	9.2	1.2	ug/kg	2
Isopropylbenzene	98-82-8	8260B	4.6	U	4.6	0.74	ug/kg	2
Methyl acetate	79-20-9	8260B	4.6	U	4.6	0.62	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.6	U	4.6	0.37	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	9.2	U	9.2	1.4	ug/kg	2
Methylcyclohexane	108-87-2	8260B	4.6	U	4.6	0.56	ug/kg	2
Methylene chloride	75-09-2	8260B	4.6	U	4.6	2.4	ug/kg	2
Styrene	100-42-5	8260B	4.6	U	4.6	1.0	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.6	U	4.6	0.43	ug/kg	2
Tetrachloroethene	127-18-4	8260B	4.6	U	4.6	2.1	ug/kg	2
Toluene	108-88-3	8260B	4.6	U	4.6	1.3	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.6	U	4.6	1.9	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	4.6	U	4.6	0.92	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	4.6	U	4.6	0.78	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

hw
11/16/10

7RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB113-02-03-09D**
Date Sampled: **10/12/2009 1445**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-009**
Matrix: **Solid**
% Solids: **83.5** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1924	MZ		19569
2	5035	8260B	1	10/14/2009 0651	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.6 UJ	U	4.6	0.73	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	4.6	U	4.6	1.8	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	4.6	U	4.6	1.4	ug/kg	2
Vinyl chloride	75-01-4	8260B	4.6	U	4.6	0.79	ug/kg	2
Xylenes (total)	1330-20-7	8260B	4.6	U	4.6	2.7	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	64	85-120	N	75	85-120
1,2-Dichloroethane-d4		76	53-142		87	53-142
Toluene-d8	N	83	85-115		99	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
1/16/10

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-010**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Use reanalyses

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1947	MZ		19569
2	5035	8260B	1	10/14/2009 0714	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	29 UJ	U	29	2.6	ug/kg	1 SSL
Benzene	71-43-2	8260B	7.2	U	7.2	1.6	ug/kg	1
Bromodichloromethane	75-27-4	8260B	72	U	72	1.6	ug/kg	1
Bromoform	75-25-2	8260B	14	U	14	1.0	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	14	U	14	2.6	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	14 R	U	14	3.4	ug/kg	1 CC
Carbon disulfide	75-15-0	8260B	7.2 UJ	U	7.2	1.9	ug/kg	1 SSL
Carbon tetrachloride	56-23-5	8260B	7.2	U	7.2	2.6	ug/kg	1
Chlorobenzene	108-90-7	8260B	7.2	U	7.2	2.1	ug/kg	1
Chloroethane	75-00-3	8260B	7.2	U	7.2	1.9	ug/kg	1
Chloroform	67-66-3	8260B	7.2	U	7.2	1.2	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	7.2	U	7.2	1.4	ug/kg	1
Cyclohexane	110-82-7	8260B	7.2	U	7.2	0.96	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	7.2	U	7.2	2.1	ug/kg	1
Dibromochloromethane	124-48-1	8260B	7.2	U	7.2	0.90	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	7.2	U	7.2	1.2	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	7.2 R	U	7.2	1.3	ug/kg	1 ISL
1,3-Dichlorobenzene	541-73-1	8260B	7.2	U	7.2	1.9	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	7.2	U	7.2	2.1	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	7.2 UJ	U	7.2	2.3	ug/kg	1 SSL
1,1-Dichloroethane	75-34-3	8260B	7.2	U	7.2	1.0	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	7.2	U	7.2	1.4	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	7.2	U	7.2	2.4	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	7.2	U	7.2	1.1	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	7.2	U	7.2	2.1	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	7.2	U	7.2	1.3	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	7.2	U	7.2	0.97	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	7.2	U	7.2	1.2	ug/kg	1
Ethylbenzene	100-41-4	8260B	7.2	U	7.2	1.6	ug/kg	1
2-Hexanone	591-78-6	8260B	14	U	14	1.9	ug/kg	1
Isopropylbenzene	98-82-8	8260B	7.2 R	U	7.2	1.1	ug/kg	1 ISL
Methyl acetate	79-20-9	8260B	7.2 UJ	U	7.2	0.96	ug/kg	1 SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	7.2	U	7.2	0.57	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	14	U	14	2.1	ug/kg	1
Methylcyclohexane	108-87-2	8260B	7.2	U	7.2	0.87	ug/kg	1
Methylene chloride	75-09-2	8260B	7.2	U	7.2	3.7	ug/kg	1
Styrene	100-42-5	8260B	7.2	U	7.2	1.6	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	7.2 R	U	7.2	0.67	ug/kg	1 ISL
Tetrachloroethene	127-18-4	8260B	7.2 UJ	U	7.2	3.3	ug/kg	1 SSL
Toluene	108-88-3	8260B	7.2	U	7.2	2.0	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	7.2	U	7.2	3.0	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	7.2 R	U	7.2	1.4	ug/kg	1 ISL
1,1,1-Trichloroethane	71-55-6	8260B	7.2 UJ	U	7.2	1.2	ug/kg	1 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
11/16/10

8

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-010**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Use reanalysis

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1947	MZ		19569
2	5035	8260B	1	10/14/2009 0714	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	7.2 W	U	7.2	1.1	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	7.2	U	7.2	2.7	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	7.2	U	7.2	2.1	ug/kg	1
Vinyl chloride	75-01-4	8260B	7.2	U	7.2	1.2	ug/kg	1
Xylenes (total)	1330-20-7	8260B	7.2	U	7.2	4.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	55	85-120	N	74	85-120
1,2-Dichloroethane-d4		97	53-142		93	53-142
Toluene-d8		96	85-115		101	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
1/16/10

8RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-010**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1947	MZ		19569
2	5035	8260B	1	10/14/2009 0714	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**230** J		**31**	**2.7**	**ug/kg**	**2** SSL
Benzene	71-43-2	8260B	7.6 UJ	U	7.6	1.7	ug/kg	2
Bromodichloromethane	75-27-4	8260B	76	U	76	1.7	ug/kg	2
Bromoform	75-25-2	8260B	15	U	15	1.1	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	15	U	15	2.7	ug/kg	2
2-Butanone (MEK)	**78-93-3**	**8260B**	**15** J		**15**	**3.7**	**ug/kg**	**2**
Carbon disulfide	75-15-0	8260B	7.6 UJ	U	7.6	2.0	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	7.6	U	7.6	2.7	ug/kg	2
Chlorobenzene	108-90-7	8260B	7.6	U	7.6	2.3	ug/kg	2
Chloroethane	75-00-3	8260B	7.6	U	7.6	2.0	ug/kg	2
Chloroform	67-66-3	8260B	7.6	U	7.6	1.3	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	7.6	U	7.6	1.5	ug/kg	2
Cyclohexane	110-82-7	8260B	7.6	U	7.6	1.0	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	7.6	U	7.6	2.3	ug/kg	2
Dibromochloromethane	124-48-1	8260B	7.6	U	7.6	0.96	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	7.6	U	7.6	1.3	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	7.6	U	7.6	1.4	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	7.6	U	7.6	2.0	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	7.6	U	7.6	2.3	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	7.6	U	7.6	2.4	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	7.6	U	7.6	1.1	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	7.6	U	7.6	1.5	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	7.6	U	7.6	2.6	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	7.6	U	7.6	1.2	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	7.6	U	7.6	2.3	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	7.6	U	7.6	1.4	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	7.6	U	7.6	1.0	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	7.6	U	7.6	1.3	ug/kg	2
Ethylbenzene	100-41-4	8260B	7.6	U	7.6	1.7	ug/kg	2
2-Hexanone	591-78-6	8260B	15	U	15	2.0	ug/kg	2
Isopropylbenzene	98-82-8	8260B	7.6	U	7.6	1.2	ug/kg	2
Methyl acetate	79-20-9	8260B	7.6	U	7.6	1.0	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	7.6	U	7.6	0.61	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	15	U	15	2.3	ug/kg	2
Methylcyclohexane	108-87-2	8260B	7.6	U	7.6	0.93	ug/kg	2
Methylene chloride	75-09-2	8260B	7.6	U	7.6	4.0	ug/kg	2
Styrene	100-42-5	8260B	7.6	U	7.6	1.7	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	7.6	U	7.6	0.72	ug/kg	2
Tetrachloroethene	127-18-4	8260B	7.6	U	7.6	3.5	ug/kg	2
Toluene	108-88-3	8260B	7.6	U	7.6	2.1	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	7.6	U	7.6	3.2	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	7.6	U	7.6	1.5	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	7.6	U	7.6	1.3	ug/kg	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MJ
11/16/10

8RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS113-0-0.5-09D**
Date Sampled: **10/12/2009 1430**
Date Received: **10/13/2009**

Laboratory ID: **KJ13004-010**
Matrix: **Solid**
% Solids: **68.0** **10/13/2009 2334**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/13/2009 1947	MZ		19569
2	5035	8260B	1	10/14/2009 0714	MZ		19609

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	7.6 UJ	U	7.6	1.2	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	7.6	U	7.6	2.9	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	7.6	U	7.6	2.3	ug/kg	2
Vinyl chloride	75-01-4	8260B	7.6	U	7.6	1.3	ug/kg	2
Xylenes (total)	1330-20-7	8260B	7.6	U	7.6	4.4	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	55	85-120	N	74	85-120
1,2-Dichloroethane-d4		97	53-142		93	53-142
Toluene-d8		96	85-115		101	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

11/10/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ14013

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB114-0-0.5-09D	KJ14013-001	Soil
1MS*	IR86-SB114-0-0.5-09DMS	KJ14013-001MS	Soil
1MSD*	IR86-SB114-0-0.5-09DMSD	KJ14013-001MSD	Soil
2	IR86-SB114-05-06-09D	KJ14013-002	Soil
3	IR86-EB01-101309-SB	KJ14013-003	Water
3MS*	IR86-EB01-101309-SBMS	KJ14013-003MS	Water
3MSD*	IR86-EB01-101309-SBMSD	KJ14013-003MSD	Water
4	IR86-SS114D-0-0.5-09D	KJ14013-004	Soil

* *MS/MSD - Mercury only*

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Arsenic (Water)	0.0035	0.0175	None	All ND

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Aluminum (Soil)	3.1	15.5	None	All >5X
Potassium (Soil)	24	120		

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101309-SB	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS114-0-0.5-09D mg/kg	IR86-SS114D-0-0.5-09D mg/kg	RPD	Qualifier
Aluminum	8000	7400	8%	None
Arsenic	0.50	0.68 U	NC	None
Barium	32	91	96%	None
Cadmium	0.67	1.8	91%	None
Calcium	2100	2600	21%	None
Chromium	8.4	9.5	12%	None
Cobalt	0.72	0.75	4%	None
Copper	11	6.6	50%	None
Iron	2600	2500	4%	None
Lead	15	17	13%	None
Magnesium	420	380	10%	None
Manganese	21	36	53%	None
Nickel	2.6	3.6	32%	None
Potassium	350	330	6%	None
Sodium	53	97	59%	None
Vanadium	13	13	0%	None
Zinc	23	92	120%	J
Mercury	0.037	0.050	30%	None

Compound Quantitation - No discrepancies were identified.

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0054	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**8000**	~~B~~	**14**	**1.8**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.71	U	0.71	0.25	mg/kg	1
Arsenic	**7440-38-2**	**6010C**	**0.50**	**J**	**0.71**	**0.27**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**32**		**1.8**	**0.13**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.28	U	0.28	0.040	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.67**		**0.14**	**0.015**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**2100**		**350**	**25**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**8.4**		**0.35**	**0.072**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.72**	**J**	**1.8**	**0.13**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**11**		**0.35**	**0.068**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2600**		**7.1**	**2.3**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010C**	**15**		**0.71**	**0.13**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**420**		**350**	**26**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**21**		**1.1**	**0.082**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**2.6**	**J**	**2.8**	**0.21**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**350**	~~B~~	**350**	**16**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.71	U	0.71	0.25	mg/kg	1
Silver	7440-22-4	6010C	0.35	U	0.35	0.059	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**53**	**J**	**350**	**24**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.5	U	3.5	0.36	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**13**		**3.5**	**0.21**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**23** J		**3.5**	**0.48**	**mg/kg**	**1** FD

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
1/15/10

2

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0057	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**9200**	~~B~~	**13**	**1.7**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.67	U	0.67	0.24	mg/kg	1
Arsenic	7440-38-2	6010C	0.67	U	0.67	0.25	mg/kg	1
Barium	**7440-39-3**	**6010C**	**13**		**1.7**	**0.12**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.27	U	0.27	0.037	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**0.065**	**J**	**0.13**	**0.014**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**530**		**330**	**24**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**9.0**		**0.33**	**0.068**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.79**	**J**	**1.7**	**0.12**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**1.5**		**0.33**	**0.065**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2500**		**6.7**	**2.2**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010C**	**7.8**		**0.67**	**0.12**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**200**	**J**	**330**	**25**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**7.3**		**1.0**	**0.077**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**1.4**	**J**	**2.7**	**0.20**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**270**	~~BJ~~	**330**	**15**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.67	U	0.67	0.23	mg/kg	1
Silver	7440-22-4	6010C	0.33	U	0.33	0.056	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**48**	**J**	**330**	**23**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.3	U	3.3	0.34	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**13**		**3.3**	**0.20**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**2.3**	**J**	**3.3**	**0.45**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

3

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	10/19/2009 2304	KJC	10/19/2009 1730	19871

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
1/15/10

4

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	10/20/2009 0101	KJC	10/16/2009 1435	19455

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**7400**	~~E~~	**14**	**1.7**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.68	U	0.68	0.24	mg/kg	1
Arsenic	7440-38-2	6010C	0.68	U	0.68	0.26	mg/kg	1
Barium	**7440-39-3**	**6010C**	**91**		**1.8**	**0.12**	**mg/kg**	**1**
Beryllium	7440-41-7	6010C	0.27	U	0.27	0.038	mg/kg	1
Cadmium	**7440-43-9**	**6010C**	**1.8**		**0.14**	**0.014**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**2600**		**340**	**24**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**9.5**		**0.34**	**0.069**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**0.75**	**J**	**1.8**	**0.13**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**6.6**		**0.34**	**0.066**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**2500**		**6.8**	**2.2**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010C**	**17**		**0.68**	**0.13**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**380**		**340**	**25**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**36**		**1.0**	**0.079**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**3.6**		**2.7**	**0.20**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**330**	**BJ**	**340**	**15**	**mg/kg**	**1**
Selenium	7782-49-2	6010C	0.68	U	0.68	0.24	mg/kg	1
Silver	7440-22-4	6010C	0.34	U	0.34	0.057	mg/kg	1
Sodium	**7440-23-5**	**6010C**	**97**	**J**	**340**	**23**	**mg/kg**	**1**
Thallium	7440-28-0	6010C	3.4	U	3.4	0.35	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**13**		**3.4**	**0.20**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**92** J		**3.4**	**0.46**	**mg/kg**	**1** FD

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
1/15/10

Mercury

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ14013-001**
Description: **IR86-SS114-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/13/2009 0930**	% Solids: **70.7** **10/14/2009 2233**
Date Received: **10/14/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/16/2009 2039	BNW	10/16/2009 1900	19770

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.037**	**J**	**0.12**	**0.0083**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

2

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/16/2009 2048	BNW	10/16/2009 1900	19770

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.037**	**J**	**0.11**	**0.0079**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

JW
11/15/10

3

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	10/21/2009 2318	BNW	10/21/2009 1645	19954

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
11/15/10

4

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	10/16/2009 2050	BNW	10/16/2009 1900	19770

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.050**	**J**	**0.11**	**0.0080**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

AW
11/5/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ14013

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB114-0-0.5-09D	KJ14013-001	Soil
2	IR86-SB114-05-06-09D	KJ14013-002	Soil
3	IR86-EB01-101309-SB	KJ14013-003	Water
4	IR86-SS114D-0-0.5-09D	KJ14013-004	Soil
5	IR86-FB01-101309	KJ14013-005	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-101309-SB	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS114D-0-0.5-09D ug/kg	IR86-SS114D-0-0.5-09D ug/kg	RPD	Qualifier
Anthracene	4.3	44	164%	J
Benzo(a)anthracene	47	240	134%	J
Benzo(a)pyrene	47	290	144%	J
Benzo(b)fluoranthene	84	360	124%	J
Benzo(g,h,i)perylene	46	230	133%	J
Benzo(k)fluoranthene	39	280	151%	J
Chrysene	62	290	130%	J
Fluoranthene	99	430	125%	J
Indeno(1,2,3-c,d)pyrene	46	220	131%	J
Naphthalene	4.6 U	1.7	NC	None
Phenanthrene	23	110	131%	J
Pyrene	81	370	128%	J

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/29/2009 1708	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	4.6	U	4.6	1.2	ug/kg	1	
Acenaphthylene	208-96-8	8270D (SIM)	4.6	U	4.6	1.3	ug/kg	1	
Anthracene	**120-12-7**	**8270D (SIM)**	**4.3**	J	**4.6**	**0.71**	**ug/kg**	**1**	FD
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**47**		**4.6**	**0.83**	**ug/kg**	**1**	
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**47**		**4.6**	**0.92**	**ug/kg**	**1**	
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**84**		**4.6**	**0.70**	**ug/kg**	**1**	
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**46**		**4.6**	**0.91**	**ug/kg**	**1**	
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**39**		**4.6**	**0.67**	**ug/kg**	**1**	
Chrysene	**218-01-9**	**8270D (SIM)**	**62**		**4.6**	**0.63**	**ug/kg**	**1**	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.6	U	4.6	0.71	ug/kg	1	
Fluoranthene	**206-44-0**	**8270D (SIM)**	**99**	J	**4.6**	**0.59**	**ug/kg**	**1**	FD
Fluorene	86-73-7	8270D (SIM)	4.6	U	4.6	0.80	ug/kg	1	
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**46**	J	**4.6**	**1.4**	**ug/kg**	**1**	FD
Naphthalene	91-20-3	8270D (SIM)	4.6	U	4.6	1.4	ug/kg	1	
Phenanthrene	**85-01-8**	**8270D (SIM)**	**23**	J	**4.6**	**1.0**	**ug/kg**	**1**	FD
Pyrene	**129-00-0**	**8270D (SIM)**	**81**	J	**4.6**	**0.70**	**ug/kg**	**1**	FD

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		103	20-150
Fluoranthene-d10		43	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/15/10

2

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	11/02/2009 1721	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.4	U	4.4	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Anthracene	120-12-7	8270D (SIM)	4.4	U	4.4	0.68	ug/kg	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	4.4	U	4.4	0.78	ug/kg	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	4.4	U	4.4	0.88	ug/kg	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	4.4	U	4.4	0.66	ug/kg	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	4.4	U	4.4	0.86	ug/kg	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	4.4	U	4.4	0.64	ug/kg	1
Chrysene	218-01-9	8270D (SIM)	4.4	U	4.4	0.60	ug/kg	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.4	U	4.4	0.68	ug/kg	1
Fluoranthene	206-44-0	8270D (SIM)	4.4	U	4.4	0.56	ug/kg	1
Fluorene	86-73-7	8270D (SIM)	4.4	U	4.4	0.76	ug/kg	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Naphthalene	91-20-3	8270D (SIM)	4.4	U	4.4	1.3	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**4.2**	**J**	**4.4**	**0.96**	**ug/kg**	**1**
Pyrene	129-00-0	8270D (SIM)	4.4	U	4.4	0.66	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		105	20-150
Fluoranthene-d10		61	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

3

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/28/2009 1903	GLR	10/19/2009 1712	19850

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		31	20-150
Fluoranthene-d10		39	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
1/15/10

4

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	10/29/2009 1745	GLR	10/22/2009 1147	20061
2	3550C	8270D (SIM)	5	10/31/2009 0038	GLR	10/22/2009 1147	20061

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	4.5	U	4.5	1.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	4.5	U	4.5	1.3	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**44**	J	**4.5**	**0.69**	**ug/kg**	**1** FD
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**240**		**22**	**4.0**	**ug/kg**	**2**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**290**		**22**	**4.5**	**ug/kg**	**2**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**360**		**22**	**3.4**	**ug/kg**	**2**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**230**		**4.5**	**0.88**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**280**		**22**	**3.2**	**ug/kg**	**2**
Chrysene	**218-01-9**	**8270D (SIM)**	**290**		**22**	**3.0**	**ug/kg**	**2**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	4.5	U	4.5	0.69	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**430**	J	**22**	**2.8**	**ug/kg**	**2** FD
Fluorene	86-73-7	8270D (SIM)	4.5	U	4.5	0.77	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**220**	J	**22**	**6.8**	**ug/kg**	**2** FD
Naphthalene	**91-20-3**	**8270D (SIM)**	**1.7**	J	**4.5**	**1.3**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**110**	J	**4.5**	**0.97**	**ug/kg**	**1** FD
Pyrene	**129-00-0**	**8270D (SIM)**	**370**	J	**22**	**3.4**	**ug/kg**	**2** FD

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		75	20-150		25	20-150
Fluoranthene-d10		55	20-150		30	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

5

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-101309**
Date Sampled: **10/13/2009 1130**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	10/29/2009 1604	GLR	10/19/2009 1712	19850

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		61	20-150
Fluoranthene-d10		46	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ14013

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SS114-0-0.5-09D	KJ14013-001	Soil
1MS**	IR86-SS114-0-0.5-09DMS	KJ14013-001MS	Soil
1MSD**	IR86-SS114-0-0.5-09DMSD	KJ14013-001MSD	Soil
2	IR86-SB114-05-06-09D	KJ14013-002	Soil
2MS*	IR86-SB114-05-06-09DMS	KJ14013-002MS	Soil
2MSD*	IR86-SB114-05-06-09DMSD	KJ14013-002MSD	Soil
3	IR86-EB01-101309-SB	KJ14013-003	Water
3MS*	IR86-EB01-101309-SBMS	KJ14013-003MS	Water
3MSD*	IR86-EB01-101309-SBMSD	KJ14013-003MSD	Water
4	IR86-SS114D-0-0.5-09D	KJ14013-004	Soil
4MS**	IR86-SS114D-0-0.5-09DMS	KJ14013-004MS	Soil
4MSD**	IR86-SS114D-0-0.5-09DMSD	KJ14013-004MSD	Soil

** MS/MSD - PCB only* *** MS/MSD - Pesticide only*

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
3 (Pest)	DCB/TCX	14%/Ok	J/UJ
3 (PCB)	DCB/TCX	12%/Ok	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
2 (PCB)	Aroclor-1016	185%/266%/36	None - Sample ND
4 (Pest)	Methoxychlor	32%/32%/Ok	J/UJ
	Toxaphene	Ok/156%/56	None - Sample ND

Laboratory Control Sample - The LCS sample exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19851	Endrin ketone	134%	None	All ND

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19851	Methoxychlor	0.027	0.135	None	All ND

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101309-SB	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS114-0-0.5-09D ug/kg	IR86-SS114D-0-0.5-09D ug/kg	RPD	Qualifier
gamma-Chlordane	2.3 U	1.1	NC	None
4,4'-DDD	4.6 U	1.3	NC	None
4,4'-DDE	4.6 U	1.7	NC	None
Endosulfan II	4.6 U	2.7	NC	None
Endrin ketone	4.6 U	3.5	NC	None
Methoxychlor	23 U	2.9	NC	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All results reported with a (P) flag by the laboratory were further qualified as estimated (J).

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3550C	8081B	1	10/28/2009 2016	ASB	10/27/2009 1715	20400

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	2.3	U	2.3	0.47	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	2.3	U	2.3	0.50	ug/kg	2
alpha-BHC	319-84-6	8081B	2.3	U	2.3	0.54	ug/kg	2
beta-BHC	319-85-7	8081B	2.3	U	2.3	0.41	ug/kg	2
delta-BHC	319-86-8	8081B	2.3	U	2.3	0.44	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	2.3	U	2.3	0.40	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	2.3	U	2.3	0.33	ug/kg	2
4,4'-DDD	72-54-8	8081B	4.6	U	4.6	0.35	ug/kg	2
4,4'-DDE	72-55-9	8081B	4.6	U	4.6	0.44	ug/kg	2
4,4'-DDT	50-29-3	8081B	4.6	U	4.6	0.39	ug/kg	2
Dieldrin	60-57-1	8081B	4.6	U	4.6	0.46	ug/kg	2
Endosulfan I	959-98-8	8081B	2.3	U	2.3	0.47	ug/kg	2
Endosulfan II	33213-65-9	8081B	4.6	U	4.6	0.35	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	4.6	U	4.6	0.32	ug/kg	2
Endrin	72-20-8	8081B	4.6	U	4.6	0.46	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	4.6	U	4.6	0.41	ug/kg	2
Endrin ketone	53494-70-5	8081B	4.6	U	4.6	0.30	ug/kg	2
Heptachlor	76-44-8	8081B	2.3	U	2.3	0.54	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	2.3	U	2.3	0.43	ug/kg	2
Methoxychlor	72-43-5	8081B	23	U	23	1.9	ug/kg	2
Toxaphene	8001-35-2	8081B	41	U	41	13	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		96	55-130
Tetrachloro-m-xylene		89	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

2

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/27/2009 0436	ASB	10/22/2009 1018	20063

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	**309-00-2**	**8081B**	**2.0**	**J**	**2.2**	**0.44**	**ug/kg**	**1**	
gamma-BHC (Lindane)	58-89-9	8081B	2.2	U	2.2	0.47	ug/kg	1	
alpha-BHC	319-84-6	8081B	2.2	U	2.2	0.51	ug/kg	1	
beta-BHC	319-85-7	8081B	2.2	U	2.2	0.39	ug/kg	1	
delta-BHC	319-86-8	8081B	2.2	U	2.2	0.42	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	2.2	U	2.2	0.38	ug/kg	1	
gamma-Chlordane	5103-74-2	8081B	2.2	U	2.2	0.31	ug/kg	1	
4,4'-DDD	**72-54-8**	**8081B**	**6.5**	**J ~~P~~**	**4.3**	**0.33**	**ug/kg**	**1**	2C
4,4'-DDE	**72-55-9**	**8081B**	**9.1**	**~~P~~**	**4.3**	**0.42**	**ug/kg**	**1**	
4,4'-DDT	**50-29-3**	**8081B**	**5.9**	**~~P~~**	**4.3**	**0.37**	**ug/kg**	**1**	
Dieldrin	**60-57-1**	**8081B**	**0.69**	**J ~~P~~**	**4.3**	**0.43**	**ug/kg**	**1**	
Endosulfan I	959-98-8	8081B	2.2	U	2.2	0.44	ug/kg	1	
Endosulfan II	33213-65-9	8081B	4.3	U	4.3	0.33	ug/kg	1	
Endosulfan sulfate	1031-07-8	8081B	4.3	U	4.3	0.30	ug/kg	1	
Endrin	72-20-8	8081B	4.3	U	4.3	0.43	ug/kg	1	
Endrin aldehyde	7421-93-4	8081B	4.3	U	4.3	0.39	ug/kg	1	
Endrin ketone	**53494-70-5**	**8081B**	**17**	**J ~~P~~**	**4.3**	**0.29**	**ug/kg**	**1**	2C
Heptachlor	76-44-8	8081B	2.2	U	2.2	0.51	ug/kg	1	
Heptachlor epoxide	**1024-57-3**	**8081B**	**6.7**	**J ~~P~~**	**2.2**	**0.40**	**ug/kg**	**1**	2C
Methoxychlor	72-43-5	8081B	22	U	22	1.7	ug/kg	1	
Toxaphene	8001-35-2	8081B	39	U	39	12	ug/kg	1	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		91	55-130
Tetrachloro-m-xylene		71	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

3

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	10/26/2009 0548	ASB	10/19/2009 1712	19851

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026 UJ	U	0.026	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	14	30-135
Tetrachloro-m-xylene		107	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

4

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	10/27/2009 0451	ASB	10/22/2009 1018	20063

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	2.3	U	2.3	0.46	ug/kg	1	
gamma-BHC (Lindane)	58-89-9	8081B	2.3	U	2.3	0.49	ug/kg	1	
alpha-BHC	319-84-6	8081B	2.3	U	2.3	0.53	ug/kg	1	
beta-BHC	319-85-7	8081B	2.3	U	2.3	0.40	ug/kg	1	
delta-BHC	319-86-8	8081B	2.3	U	2.3	0.43	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	2.3	U	2.3	0.39	ug/kg	1	
gamma-Chlordane	**5103-74-2**	**8081B**	**1.1**	J ~~JP~~	**2.3**	**0.32**	**ug/kg**	**1**	2C
4,4'-DDD	**72-54-8**	**8081B**	**1.3**	J ~~JP~~	**4.5**	**0.34**	**ug/kg**	**1**	2C
4,4'-DDE	**72-55-9**	**8081B**	**1.7**	**J**	**4.5**	**0.43**	**ug/kg**	**1**	
4,4'-DDT	50-29-3	8081B	4.5	U	4.5	0.38	ug/kg	1	
Dieldrin	60-57-1	8081B	4.5	U	4.5	0.45	ug/kg	1	
Endosulfan I	959-98-8	8081B	2.3	U	2.3	0.46	ug/kg	1	
Endosulfan II	**33213-65-9**	**8081B**	**2.7**	J ~~JP~~	**4.5**	**0.34**	**ug/kg**	**1**	2C
Endosulfan sulfate	1031-07-8	8081B	4.5	U	4.5	0.31	ug/kg	1	
Endrin	72-20-8	8081B	4.5	U	4.5	0.45	ug/kg	1	
Endrin aldehyde	7421-93-4	8081B	4.5	U	4.5	0.40	ug/kg	1	
Endrin ketone	**53494-70-5**	**8081B**	**3.5**	J ~~JP~~	**4.5**	**0.30**	**ug/kg**	**1**	2C
Heptachlor	76-44-8	8081B	2.3	U	2.3	0.53	ug/kg	1	
Heptachlor epoxide	1024-57-3	8081B	2.3	U	2.3	0.42	ug/kg	1	
Methoxychlor	**72-43-5**	**8081B**	**2.9**	J ~~J~~	**23**	**1.8**	**ug/kg**	**1**	MSL
Toxaphene	8001-35-2	8081B	40	U	40	12	ug/kg	1	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		110	55-130
Tetrachloro-m-xylene		77	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/15/10

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/26/2009 2035	NCM	10/22/2009 1018	20067

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	47	U	47	1.6	ug/kg	1
Aroclor 1221	11104-28-2	8082A	94	U	94	14	ug/kg	1
Aroclor 1232	11141-16-5	8082A	47	U	47	4.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	47	U	47	3.2	ug/kg	1
Aroclor 1248	12672-29-6	8082A	47	U	47	5.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	47	U	47	2.5	ug/kg	1
Aroclor 1260	11096-82-5	8082A	47	U	47	8.0	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		104	60-125
Tetrachloro-m-xylene		61	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

2

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/26/2009 2048	NCM	10/22/2009 1018	20067

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	43	U	43	1.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	87	U	87	13	ug/kg	1
Aroclor 1232	11141-16-5	8082A	43	U	43	4.3	ug/kg	1
Aroclor 1242	53469-21-9	8082A	43	U	43	3.0	ug/kg	1
Aroclor 1248	12672-29-6	8082A	43	U	43	5.0	ug/kg	1
Aroclor 1254	11097-69-1	8082A	43	U	43	2.3	ug/kg	1
Aroclor 1260	11096-82-5	8082A	43	U	43	7.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		91	60-125
Tetrachloro-m-xylene		91	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
11/15/10

3

TCL Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	10/22/2009 2345	NCM	10/19/2009 1712	19854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26 UJ	U	0.26	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	12	40-135
Tetrachloro-m-xylene		111	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
1/15/10

TCL Aroclors

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	10/26/2009 2125	NCM	10/22/2009 1018	20067

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	45	U	45	1.5	ug/kg	1
Aroclor 1221	11104-28-2	8082A	90	U	90	13	ug/kg	1
Aroclor 1232	11141-16-5	8082A	45	U	45	4.5	ug/kg	1
Aroclor 1242	53469-21-9	8082A	45	U	45	3.1	ug/kg	1
Aroclor 1248	12672-29-6	8082A	45	U	45	5.1	ug/kg	1
Aroclor 1254	11097-69-1	8082A	45	U	45	2.4	ug/kg	1
Aroclor 1260	11096-82-5	8082A	45	U	45	7.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		93	60-125
Tetrachloro-m-xylene		91	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ew
1/15/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ14013

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB114-0-0.5-09D	KJ14013-001	Soil
2	IR86-SB114-05-06-09D	KJ14013-002	Soil
3	IR86-EB01-101309-SB	KJ14013-003	Water
4	IR86-SS114D-0-0.5-09D	KJ14013-004	Soil
5	IR86-FB01-101309	KJ14013-005	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
4	2-Fluorobiphenyl	42%	None for one out
5	Nitrobenzene-d5	25%	J/UJ - Base/neutral Cmpds
	2-Fluorobiphenyl	31%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19848	Hexachlorocyclopentadiene	24%	J/UJ	3

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19848	bis(2-Ethylhexyl)phthalate	0.29	2.9	U	3, 5

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-101309-SB	None - ND	-	-	-	-
IR86-FB01-101309	Caprolactam	3.3	550	None	All ND

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS114-0-0.5-09D ug/kg	IR86-SS114D-0-0.5-09D ug/kg	RPD	Qualifier
Butyl benzyl phthalate	350 U	60	NC	None
Carbazole	350 U	46	NC	None
bis(2-Ethylhexyl)phthalate	41	140	109%	J

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2051	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	350	U	350	25	ug/kg	1	
Atrazine	1912-24-9	8270D	350	U	350	24	ug/kg	1	
Benzaldehyde	100-52-7	8270D	350	U	350	24	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	350	U	350	14	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	350	U	350	14	ug/kg	1	
Butyl benzyl phthalate	85-68-7	8270D	350	U	350	31	ug/kg	1	
Caprolactam	105-60-2	8270D	350	U	350	24	ug/kg	1	
Carbazole	86-74-8	8270D	350	U	350	20	ug/kg	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	350	U	350	12	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	350	U	350	9.5	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	350	U	350	14	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	46	U	46	13	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	350	U	350	15	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	350	U	350	15	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	350	U	350	13	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	350	U	350	15	ug/kg	1	
Dibenzofuran	132-64-9	8270D	350	U	350	14	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	350	U	350	50	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	350	U	350	14	ug/kg	1	
Diethylphthalate	84-66-2	8270D	350	U	350	15	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	350	U	350	15	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	350	U	350	17	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	350	U	350	25	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	550	U	550	180	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	460	U	460	150	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	350	U	350	25	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	350	U	350	24	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	350	U	350	45	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**41** J	✓	**350**	**17**	**ug/kg**	**1**	FD
Hexachlorobenzene	118-74-1	8270D	350	U	350	21	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	350	U	350	15	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	350	U	350	34	ug/kg	1	
Hexachloroethane	67-72-1	8270D	350	U	350	12	ug/kg	1	
Isophorone	78-59-1	8270D	250	U	250	10	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	350	U	350	14	ug/kg	1	
2-Methylphenol	95-48-7	8270D	350	U	350	8.4	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	94	U	94	17	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	350	U	350	32	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	350	U	350	55	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	350	U	350	27	ug/kg	1	
Nitrobenzene	98-95-3	8270D	350	U	350	7.6	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	350	U	350	25	ug/kg	1	
4-Nitrophenol	100-02-7	8270D	420	U	420	130	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	350	U	350	18	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2051	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	350	U	350	12	ug/kg	1
Pentachlorophenol	87-86-5	8270D	590	U	590	200	ug/kg	1
Phenol	108-95-2	8270D	350	U	350	13	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	350	U	350	13	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	350	U	350	14	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	35-100
2-Fluorobiphenyl		61	45-105
Terphenyl-d14		61	30-125
2-Fluorophenol		58	35-105
Phenol-d5		56	40-100
2,4,6-Tribromophenol		74	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Semivolatile Organic Compounds by GC/MS

2

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/09/2009 0005	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	**98-86-2**	**8270D**	**24**	**J**	**330**	**24**	**ug/kg**	**1**
Atrazine	1912-24-9	8270D	330	U	330	23	ug/kg	1
Benzaldehyde	**100-52-7**	**8270D**	**28**	**J**	**330**	**23**	**ug/kg**	**1**
1,1'-Biphenyl	92-52-4	8270D	330	U	330	13	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	330	U	330	13	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	330	U	330	29	ug/kg	1
Caprolactam	105-60-2	8270D	330	U	330	23	ug/kg	1
Carbazole	86-74-8	8270D	330	U	330	19	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	330	U	330	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	330	U	330	9.0	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	330	U	330	13	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	44	U	44	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	330	U	330	15	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	330	U	330	15	ug/kg	1
2-Chlorophenol	95-57-8	8270D	330	U	330	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	330	U	330	15	ug/kg	1
Dibenzofuran	132-64-9	8270D	330	U	330	13	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	330	U	330	48	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	330	U	330	13	ug/kg	1
Diethylphthalate	84-66-2	8270D	330	U	330	15	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	330	U	330	15	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	330	U	330	16	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	330	U	330	24	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	520	U	520	170	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	440	U	440	150	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	330	U	330	24	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	330	U	330	23	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	330	U	330	43	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	330	U	330	16	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	330	U	330	20	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	330	U	330	15	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	330	U	330	32	ug/kg	1
Hexachloroethane	67-72-1	8270D	330	U	330	12	ug/kg	1
Isophorone	78-59-1	8270D	240	U	240	9.8	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	330	U	330	13	ug/kg	1
2-Methylphenol	95-48-7	8270D	330	U	330	8.0	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	89	U	89	16	ug/kg	1
2-Nitroaniline	88-74-4	8270D	330	U	330	31	ug/kg	1
3-Nitroaniline	99-09-2	8270D	330	U	330	52	ug/kg	1
4-Nitroaniline	100-01-6	8270D	330	U	330	25	ug/kg	1
Nitrobenzene	98-95-3	8270D	330	U	330	7.2	ug/kg	1
2-Nitrophenol	88-75-5	8270D	330	U	330	24	ug/kg	1
4-Nitrophenol	100-02-7	8270D	400	U	400	130	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	330	U	330	17	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

2

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/09/2009 0005	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	330	U	330	11	ug/kg	1
Pentachlorophenol	87-86-5	8270D	560	U	560	190	ug/kg	1
Phenol	108-95-2	8270D	330	U	330	12	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	330	U	330	12	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	330	U	330	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	35-100
2-Fluorobiphenyl		63	45-105
Terphenyl-d14		63	30-125
2-Fluorophenol		52	35-105
Phenol-d5		55	40-100
2,4,6-Tribromophenol		72	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/07/2009 2305	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1	
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1	
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1	
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1	
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1	
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1	
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1	
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	5.1 ~~0.50~~	U	**5.1**	**0.11**	**ug/L**	**1**	MBL
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1	
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1	
Hexachlorocyclopentadiene	77-47-4	8270D	10	UJ	10	0.23	ug/L	1	BSL
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1	
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1	
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1	
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1	
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1	
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1	
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1	
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

3

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/07/2009 2305	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		50	40-110
2-Fluorobiphenyl		50	50-110
Terphenyl-d14		58	50-135
2-Fluorophenol		44	20-110
Phenol-d5		46	10-115
2,4,6-Tribromophenol		54	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

Semivolatile Organic Compounds by GC/MS

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2246	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	340	U	340	24	ug/kg	1
Atrazine	1912-24-9	8270D	340	U	340	23	ug/kg	1
Benzaldehyde	100-52-7	8270D	340	U	340	23	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	340	U	340	14	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	340	U	340	13	ug/kg	1
Butyl benzyl phthalate	**85-68-7**	**8270D**	**60**	**J**	**340**	**30**	**ug/kg**	**1**
Caprolactam	105-60-2	8270D	340	U	340	23	ug/kg	1
Carbazole	**86-74-8**	**8270D**	**46**	**J**	**340**	**19**	**ug/kg**	**1**
4-Chloro-3-methyl phenol	59-50-7	8270D	340	U	340	11	ug/kg	1
4-Chloroaniline	106-47-8	8270D	340	U	340	9.2	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	340	U	340	14	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	45	U	45	12	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	340	U	340	15	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	340	U	340	15	ug/kg	1
2-Chlorophenol	95-57-8	8270D	340	U	340	12	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	340	U	340	15	ug/kg	1
Dibenzofuran	132-64-9	8270D	340	U	340	14	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	340	U	340	49	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	340	U	340	14	ug/kg	1
Diethylphthalate	84-66-2	8270D	340	U	340	15	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	340	U	340	15	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	340	U	340	16	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	340	U	340	24	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	530	U	530	180	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	450	U	450	150	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	340	U	340	24	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	340	U	340	23	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	340	U	340	43	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**140**	**J**	**340**	**16**	**ug/kg**	**1** FP
Hexachlorobenzene	118-74-1	8270D	340	U	340	20	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	340	U	340	15	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	340	U	340	32	ug/kg	1
Hexachloroethane	67-72-1	8270D	340	U	340	12	ug/kg	1
Isophorone	78-59-1	8270D	240	U	240	10	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	340	U	340	13	ug/kg	1
2-Methylphenol	95-48-7	8270D	340	U	340	8.1	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	91	U	91	16	ug/kg	1
2-Nitroaniline	88-74-4	8270D	340	U	340	31	ug/kg	1
3-Nitroaniline	99-09-2	8270D	340	U	340	53	ug/kg	1
4-Nitroaniline	100-01-6	8270D	340	U	340	26	ug/kg	1
Nitrobenzene	98-95-3	8270D	340	U	340	7.3	ug/kg	1
2-Nitrophenol	88-75-5	8270D	340	U	340	24	ug/kg	1
4-Nitrophenol	100-02-7	8270D	410	U	410	130	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	340	U	340	18	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
11/15/10

Semivolatile Organic Compounds by GC/MS

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	11/07/2009 2246	CRM	10/22/2009 1147	20062

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	340	U	340	12	ug/kg	1
Pentachlorophenol	87-86-5	8270D	570	U	570	190	ug/kg	1
Phenol	108-95-2	8270D	340	U	340	12	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	340	U	340	13	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	340	U	340	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		37	35-100
2-Fluorobiphenyl	N	42	45-105
Terphenyl-d14		59	30-125
2-Fluorophenol		38	35-105
Phenol-d5		40	40-100
2,4,6-Tribromophenol		70	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-101309**
Date Sampled: **10/13/2009 1130**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/09/2009 0024	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	UJ U	10	0.32	ug/L	1 SSL
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1
Caprolactam	**105-60-2**	**8270D**	**3.3**	**J**	**10**	**1.2**	**ug/L**	**1**
Carbazole	86-74-8	8270D	1.0	UJ U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	UJ U	5.1	0.22	ug/L	1 SSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	UJ U	5.1	0.20	ug/L	1 SSL
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	UJ U	1.0	0.14	ug/L	1 SSL
Dimethyl phthalate	131-11-3	8270D	5.1	UJ U	5.1	0.11	ug/L	1 SSL
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	UJ ~~U~~	5.1	0.061	ug/L	1 SSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	UJ U	2.0	0.25	ug/L	1 SSL
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	5.1 ~~1.4~~	UJ ~~J~~	**5.1**	**0.11**	**ug/L**	**1 MBC, SSL**
Hexachlorobenzene	118-74-1	8270D	1.0	UJ U	1.0	0.17	ug/L	1 SSL
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	UJ U	2.0	0.33	ug/L	1 SSL
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	UJ ~~U~~	5.1	0.20	ug/L	1 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

5

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-101309**
Date Sampled: **10/13/2009 1130**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	11/09/2009 0024	CRM	10/19/2009 1712	19848

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	UJ ~~U~~	5.1	0.24	ug/L	1 SSL
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	25	40-110
2-Fluorobiphenyl	N	31	50-110
Terphenyl-d14		75	50-135
2-Fluorophenol		23	20-110
Phenol-d5		24	10-115
2,4,6-Tribromophenol		56	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
11/15/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KJ14013

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: January 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SB114-0-0.5-09D	KJ14013-001	Soil
2	IR86-SB114-05-06-09D	KJ14013-002	Soil
2RE	IR86-SB114-05-06-09DRE	KJ14013-002RE	Soil
3	IR86-EB01-101309-SB	KJ14013-003	Water
4	IR86-SS114D-0-0.5-09D	KJ14013-004	Soil
4RE	IR86-SS114D-0-0.5-09DRE	KJ14013-004RE	Soil
5	IR86-FB01-101309	KJ14013-005	Water
6	IR86-TB01-101309	KJ14013-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
10/14/09	Chloromethane	34.08%	J/UJ	1
	Bromomethane	25.88%		
	1,2-Dibromo-3-chloropropane	26.06%		
10/14/09	2-Hexanone	26.22%	J/UJ	3
10/15/09	Methyl acetate	25.12%	J/UJ	5, 6

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
2	Bromofluorobenzene	81%	None - See IS
2RE	Bromofluorobenzene	70%	None - See IS
4	Bromofluorobenzene	82%	J/UJ
4RE	Bromofluorobenzene	68%	J/UJ

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
KQ19582	1,2-Dibromomethane (EDB)	79%	J/UJ	3

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	All internal standards	Low	J/UJ
2RE	Internal standards 1,2,3	Low	J/UJ
	1,4-Dichlorobenzene-d4	Severely low	J/R
4RE	1,4-Dichlorobenzene-d4	Low	None - See Surrogates

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
KQ19676	1,2,4-Trichlorobenzene	0.18	0.90	None	All ND

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-101309-SB	None - ND	-	-	-	-
IR86-FB01-101309	None - ND	-	-	-	-
IR86-TB01-101309	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SS114-0-0.5-09D ug/kg	IR86-SS114D-0-0.5-09D ug/kg	RPD	Qualifier
Acetone	9.5	ND	NC	None
Methylene chloride	12	ND	NC	None

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - Several samples exhibited low internal standard and surrogate results. The samples were reanalyzed with similar results. See Form Is for which to report.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/14/2009 1536	MZ		20472

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	**67-64-1**	**8260B**	**9.5**	**J**	**26**	**2.4**	**ug/kg**	**2**	
Benzene	71-43-2	8260B	ND		6.6	1.5	ug/kg	2	
Bromodichloromethane	75-27-4	8260B	ND		6.6	1.5	ug/kg	2	
Bromoform	75-25-2	8260B	ND		13	0.92	ug/kg	2	
Bromomethane (Methyl bromide)	74-83-9	8260B	~~ND~~ UJ		13	2.4	ug/kg	2	CCH
2-Butanone (MEK)	78-93-3	8260B	ND		13	3.2	ug/kg	2	
Carbon disulfide	75-15-0	8260B	ND		6.6	1.7	ug/kg	2	
Carbon tetrachloride	56-23-5	8260B	ND		6.6	2.4	ug/kg	2	
Chlorobenzene	108-90-7	8260B	ND		6.6	2.0	ug/kg	2	
Chloroethane	75-00-3	8260B	ND		6.6	1.7	ug/kg	2	
Chloroform	67-66-3	8260B	ND		6.6	1.1	ug/kg	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	~~ND~~ UJ		6.6	1.3	ug/kg	2	CCH
Cyclohexane	110-82-7	8260B	ND		6.6	0.89	ug/kg	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	~~ND~~ UJ		6.6	2.0	ug/kg	2	CCH
Dibromochloromethane	124-48-1	8260B	ND		6.6	0.83	ug/kg	2	
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		6.6	1.1	ug/kg	2	
1,2-Dichlorobenzene	95-50-1	8260B	ND		6.6	1.2	ug/kg	2	
1,3-Dichlorobenzene	541-73-1	8260B	ND		6.6	1.7	ug/kg	2	
1,4-Dichlorobenzene	106-46-7	8260B	ND		6.6	2.0	ug/kg	2	
Dichlorodifluoromethane	75-71-8	8260B	ND		6.6	2.1	ug/kg	2	
1,1-Dichloroethane	75-34-3	8260B	ND		6.6	0.96	ug/kg	2	
1,2-Dichloroethane	107-06-2	8260B	ND		6.6	1.3	ug/kg	2	
1,1-Dichloroethene	75-35-4	8260B	ND		6.6	2.2	ug/kg	2	
cis-1,2-Dichloroethene	156-59-2	8260B	ND		6.6	1.0	ug/kg	2	
trans-1,2-Dichloroethene	156-60-5	8260B	ND		6.6	2.0	ug/kg	2	
1,2-Dichloropropane	78-87-5	8260B	ND		6.6	1.2	ug/kg	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		6.6	0.90	ug/kg	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		6.6	1.1	ug/kg	2	
Ethylbenzene	100-41-4	8260B	ND		6.6	1.5	ug/kg	2	
2-Hexanone	591-78-6	8260B	ND		13	1.7	ug/kg	2	
Isopropylbenzene	98-82-8	8260B	ND		6.6	1.1	ug/kg	2	
Methyl acetate	79-20-9	8260B	ND		6.6	0.88	ug/kg	2	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		6.6	0.53	ug/kg	2	
4-Methyl-2-pentanone	108-10-1	8260B	ND		13	2.0	ug/kg	2	
Methylcyclohexane	108-87-2	8260B	ND		6.6	0.80	ug/kg	2	
Methylene chloride	**75-09-2**	**8260B**	**12**		**6.6**	**3.4**	**ug/kg**	**2**	
Styrene	100-42-5	8260B	ND		6.6	1.5	ug/kg	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		6.6	0.62	ug/kg	2	
Tetrachloroethene	127-18-4	8260B	ND		6.6	3.0	ug/kg	2	
Toluene	108-88-3	8260B	ND		6.6	1.8	ug/kg	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		6.6	2.8	ug/kg	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		6.6	1.3	ug/kg	2	
1,1,1-Trichloroethane	71-55-6	8260B	ND		6.6	1.1	ug/kg	2	
1,1,2-Trichloroethane	79-00-5	8260B	ND		6.6	1.0	ug/kg	2	

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114-0-0.5-09D**
Date Sampled: **10/13/2009 0930**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-001**
Matrix: **Solid**
% Solids: **70.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5035	8260B	1	10/14/2009 1536	MZ		20472

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		6.6	2.5	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		6.6	2.0	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		6.6	1.1	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		6.6	3.8	ug/kg	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		85	85-120
1,2-Dichloroethane-d4		92	53-142
Toluene-d8		99	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
1/15/10

2

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1346	MZ		19737
2	5035	8260B	1	10/22/2009 1502	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**3.1**	J	**25**	**2.2**	**ug/kg**	**1** ISL
Benzene	71-43-2	8260B	ND	UJ	6.1	1.3	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		6.1	1.3	ug/kg	1
Bromoform	75-25-2	8260B	ND		12	0.86	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		12	2.2	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		12	2.9	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		6.1	1.6	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		6.1	2.2	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		6.1	1.8	ug/kg	1
Chloroethane	75-00-3	8260B	ND		6.1	1.6	ug/kg	1
Chloroform	67-66-3	8260B	ND		6.1	1.0	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		6.1	1.2	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		6.1	0.83	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		6.1	1.8	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		6.1	0.77	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		6.1	1.0	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		6.1	1.1	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		6.1	1.6	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		6.1	1.8	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		6.1	2.0	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		6.1	0.90	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		6.1	1.2	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		6.1	2.1	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		6.1	0.93	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		6.1	1.8	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		6.1	1.1	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		6.1	0.83	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		6.1	1.0	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		6.1	1.3	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		12	1.6	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		6.1	0.98	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		6.1	0.82	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		6.1	0.49	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		12	1.8	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		6.1	0.75	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		6.1	3.2	ug/kg	1
Styrene	100-42-5	8260B	ND		6.1	1.3	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		6.1	0.58	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		6.1	2.8	ug/kg	1
Toluene	108-88-3	8260B	ND		6.1	1.7	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		6.1	2.6	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		6.1	1.2	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		6.1	1.0	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
1/15/10

2

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1346	MZ		19737
2	5035	8260B	1	10/22/2009 1502	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	~~ND~~	UJ	6.1	0.97	ug/kg	1 JSL
Trichloroethene	79-01-6	8260B	~~ND~~		6.1	2.3	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	~~ND~~		6.1	1.8	ug/kg	1
Vinyl chloride	75-01-4	8260B	~~ND~~		6.1	1.1	ug/kg	1
Xylenes (total)	1330-20-7	8260B	~~ND~~		6.1	3.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	81	85-120	N	70	85-120
1,2-Dichloroethane-d4		89	53-142		102	53-142
Toluene-d8		100	85-115		102	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
1/15/10

2RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1346	MZ		19737
2	5035	8260B	1	10/22/2009 1502	DLB		20188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**15**	J ✓	**24**	**2.1**	**ug/kg**	**2** ISL
Benzene	71-43-2	8260B	ND	UJ	5.9	1.3	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		5.9	1.3	ug/kg	2
Bromoform	75-25-2	8260B	ND		12	0.83	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		12	2.1	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		12	2.9	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		5.9	1.5	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		5.9	2.1	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		5.9	1.8	ug/kg	2
Chloroethane	75-00-3	8260B	ND		5.9	1.5	ug/kg	2
Chloroform	67-66-3	8260B	ND		5.9	0.99	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.9	1.2	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		5.9	0.80	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.9	1.8	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		5.9	0.75	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.9	1.0	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND	R	5.9	1.1	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.9	1.5	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.9	1.8	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND	UJ	5.9	1.9	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.9	0.87	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		5.9	1.2	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		5.9	2.0	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.9	0.90	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.9	1.8	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		5.9	1.1	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.9	0.81	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.9	0.98	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		5.9	1.3	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		12	1.5	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND	R	5.9	0.95	ug/kg	2
Methyl acetate	79-20-9	8260B	ND	UJ	5.9	0.80	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.9	0.48	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		12	1.8	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		5.9	0.73	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		5.9	3.1	ug/kg	2
Styrene	100-42-5	8260B	ND		5.9	1.3	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND	R	5.9	0.56	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND	UJ	5.9	2.7	ug/kg	2
Toluene	108-88-3	8260B	ND		5.9	1.7	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.9	2.5	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND	R	5.9	1.2	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND	UJ	5.9	1.0	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

2RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SB114-05-06-09D**
Date Sampled: **10/13/2009 1015**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-002**
Matrix: **Solid**
% Solids: **74.7** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1346	MZ		19737
2	5035	8260B	1	10/22/2009 1502	DLB		20188

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.9	0.94	ug/kg	2 JSL
Trichloroethene	79-01-6	8260B	ND		5.9	2.3	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		5.9	1.8	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		5.9	1.0	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		5.9	3.4	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	81	85-120	N	70	85-120
1,2-Dichloroethane-d4		89	53-142		102	53-142
Toluene-d8		100	85-115		102	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Laboratory ID: **KJ14013-003**
Description: **IR86-EB01-101309-SB**
Matrix: **Aqueous**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1529	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		10	3.3	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	ND		1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND	UJ	0.50	0.061	ug/L	1 BSL
1,2-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	ND	UJ	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.031	ug/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

1/15/10

3

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-101309-SB**
Date Sampled: **10/13/2009 1040**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-003**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/14/2009 1529	DLB		19582

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		111	70-120
Toluene-d8		117	85-120
Bromofluorobenzene		108	75-120

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
11/15/10

4

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1410	MZ		19737
2	5035	8260B	1	10/14/2009 1649	MZ		20472

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	23	2.0	ug/kg	1 SSL
Benzene	71-43-2	8260B	ND		5.7	1.2	ug/kg	1
Bromodichloromethane	75-27-4	8260B	ND		5.7	1.2	ug/kg	1
Bromoform	75-25-2	8260B	ND		11	0.79	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		11	2.0	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	ND		11	2.7	ug/kg	1
Carbon disulfide	75-15-0	8260B	ND		5.7	1.5	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	ND		5.7	2.0	ug/kg	1
Chlorobenzene	108-90-7	8260B	ND		5.7	1.7	ug/kg	1
Chloroethane	75-00-3	8260B	ND		5.7	1.5	ug/kg	1
Chloroform	67-66-3	8260B	ND		5.7	0.94	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.7	1.1	ug/kg	1
Cyclohexane	110-82-7	8260B	ND		5.7	0.76	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.7	1.7	ug/kg	1
Dibromochloromethane	124-48-1	8260B	ND		5.7	0.71	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.7	0.96	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.7	1.1	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.7	1.5	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.7	1.7	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.7	1.8	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.7	0.83	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.7	1.1	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.7	1.9	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.7	0.86	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.7	1.7	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.7	1.0	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.7	0.77	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.7	0.93	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		5.7	1.2	ug/kg	1
2-Hexanone	591-78-6	8260B	ND		11	1.5	ug/kg	1
Isopropylbenzene	98-82-8	8260B	ND		5.7	0.91	ug/kg	1
Methyl acetate	79-20-9	8260B	ND		5.7	0.76	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.7	0.45	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		11	1.7	ug/kg	1
Methylcyclohexane	108-87-2	8260B	ND		5.7	0.69	ug/kg	1
Methylene chloride	75-09-2	8260B	ND		5.7	2.9	ug/kg	1
Styrene	100-42-5	8260B	ND		5.7	1.2	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.7	0.53	ug/kg	1
Tetrachloroethene	127-18-4	8260B	ND		5.7	2.6	ug/kg	1
Toluene	108-88-3	8260B	ND		5.7	1.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.7	2.4	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.7	1.1	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.7	0.96	ug/kg	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
1/15/10

Volatile Organic Compounds by GC/MS

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1410	MZ		19737
2	5035	8260B	1	10/14/2009 1649	MZ		20472

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.7	0.89	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	ND		5.7	2.1	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.7	1.7	ug/kg	1
Vinyl chloride	75-01-4	8260B	ND		5.7	0.97	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		5.7	3.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	82	85-120	N	68	85-120
1,2-Dichloroethane-d4		89	53-142		96	53-142
Toluene-d8		97	85-115		96	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
1/15/10

4RE

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SS114D-0-0.5-09D**
Date Sampled: **10/13/2009 0935**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-004**
Matrix: **Solid**
% Solids: **73.4** **10/14/2009 2233**

Use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1410	MZ		19737
2	5035	8260B	1	10/14/2009 1649	MZ		20472

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND	UJ	23	2.1	ug/kg	2 SSL
Benzene	71-43-2	8260B	ND		5.8	1.3	ug/kg	2
Bromodichloromethane	75-27-4	8260B	ND		5.8	1.3	ug/kg	2
Bromoform	75-25-2	8260B	ND		12	0.81	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		12	2.1	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	ND		12	2.8	ug/kg	2
Carbon disulfide	75-15-0	8260B	ND		5.8	1.5	ug/kg	2
Carbon tetrachloride	56-23-5	8260B	ND		5.8	2.1	ug/kg	2
Chlorobenzene	108-90-7	8260B	ND		5.8	1.7	ug/kg	2
Chloroethane	75-00-3	8260B	ND		5.8	1.5	ug/kg	2
Chloroform	67-66-3	8260B	ND		5.8	0.96	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.8	1.2	ug/kg	2
Cyclohexane	110-82-7	8260B	ND		5.8	0.78	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.8	1.7	ug/kg	2
Dibromochloromethane	124-48-1	8260B	ND		5.8	0.73	ug/kg	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.8	0.99	ug/kg	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.8	1.1	ug/kg	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.8	1.5	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.8	1.7	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	ND		5.8	1.9	ug/kg	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.8	0.85	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	ND		5.8	1.2	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	ND		5.8	2.0	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.8	0.88	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.8	1.7	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	ND		5.8	1.1	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.8	0.79	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.8	0.95	ug/kg	2
Ethylbenzene	100-41-4	8260B	ND		5.8	1.3	ug/kg	2
2-Hexanone	591-78-6	8260B	ND		12	1.5	ug/kg	2
Isopropylbenzene	98-82-8	8260B	ND		5.8	0.93	ug/kg	2
Methyl acetate	79-20-9	8260B	ND		5.8	0.78	ug/kg	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.8	0.46	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		12	1.7	ug/kg	2
Methylcyclohexane	108-87-2	8260B	ND		5.8	0.71	ug/kg	2
Methylene chloride	75-09-2	8260B	ND		5.8	3.0	ug/kg	2
Styrene	100-42-5	8260B	ND		5.8	1.3	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.8	0.55	ug/kg	2
Tetrachloroethene	127-18-4	8260B	ND		5.8	2.7	ug/kg	2
Toluene	108-88-3	8260B	ND		5.8	1.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.8	2.4	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.8	1.2	ug/kg	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.8	0.99	ug/kg	2

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
1/15/10

Volatile Organic Compounds by GC/MS

4RE

Client: **CH2M HILL, Inc.**	Laboratory ID: **KJ14013-004**
Description: **IR86-SS114D-0-0.5-09D**	Matrix: **Solid**
Date Sampled: **10/13/2009 0935**	% Solids: **73.4** **10/14/2009 2233**
Date Received: **10/14/2009**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	10/15/2009 1410	MZ		19737
2	5035	8260B	1	10/14/2009 1649	MZ		20472

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	ND	UJ	5.8	0.92	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	ND		5.8	2.2	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	ND		5.8	1.7	ug/kg	2
Vinyl chloride	75-01-4	8260B	ND		5.8	1.0	ug/kg	2
Xylenes (total)	1330-20-7	8260B	ND		5.8	3.4	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	82	85-120	N	68	85-120
1,2-Dichloroethane-d4		89	53-142		96	53-142
Toluene-d8		97	85-115		96	85-115

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
1/15/10

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-101309**
Date Sampled: **10/13/2009 1130**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/15/2009 1705	DLB		19676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~J~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

5

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-101309**
Date Sampled: **10/13/2009 1130**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-005**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/15/2009 1705	DLB		19676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		106	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
1/15/10

Volatile Organic Compounds by GC/MS

6

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101309**
Date Sampled: **10/13/2009**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-006**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/15/2009 1726	DLB		19676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

6

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-101309**
Date Sampled: **10/13/2009**
Date Received: **10/14/2009**

Laboratory ID: **KJ14013-006**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	10/15/2009 1726	DLB		19676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		106	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD106-0-0.5-09D	KK10035-001	Soil
2	IR86-SD105-0-0.5-09D	KK10035-002	Soil
3	IR86-SD108-0-0.5-09D	KK10035-003	Soil
4	IR86-SD109-0-0.5-09D	KK10035-004	Soil
5	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6	IR86-SD112-0-0.5-09D	KK10035-006	Soil
7	IR86-SD113-0-0.5-09D	KK10035-007	Soil
7MS	IR86-SD113-0-0.5-09DMS	KK10035-007MS	Soil
7MSD	IR86-SD113-0-0.5-09DMSD	KK10035-007MSD	Soil
7RE	IR86-SD113-0-0.5-09DRE	KK10035-007RE	Soil
-	NA - TB Sample	-	-
9	IR86-SW113-09D	KK10035-009	Water
10	IR86-EB01-111009-SD	KK10035-010	Water
-	Not Analyzed for PAH	-	-
-	Not Analyzed for PAH	-	-
13	IR86-SW108-09D	KK10035-013	Water
14	IR86-SW110-09D	KK10035-014	Water
15	IR86-SW112-09D	KK10035-015	Water
16	IR86-SW105-09D	KK10035-016	Water
17	IR86-SW105D-09D	KK10035-017	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1	11/08/09	12/08/09	30	J/R
7RE	11/08/09	12/07/09	29	J/R

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - Several samples exhibited "0D" surrogate recoveries due to being diluted out. No action was taken on this basis.

MS/MSD - MS/MSD samples 5 and 7 were analyzed at a dilution and the %R and RPD values were not valid. No action was taken on this basis.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D ug/L	IR86-SW105D-09D ug/L	RPD	Qualifier
Benzo(a)anthracene	0.14	0.14	0%	None
Benzo(b)fluoranthene	0.046	0.21 U	NC	None
Fluoranthene	0.043	0.035	21%	None
Naphthalene	0.15	0.19	24%	None
Phenanthrene	0.029	0.21 U	NC	None
Pyrene	0.043	0.034	23%	None

Compound Quantitation - Several samples were analyzed at a dilution due to high concentrations of target analytes.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/19/2009 1936	DC	12/08/2009 1820	23211

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	36 R	~~UH~~	36	9.1	ug/kg	1 HT
Acenaphthylene	208-96-8	8270D (SIM)	36 R	~~UH~~	36	10	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**23 J**	~~JH~~	**36**	**5.6**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**100**	~~H~~	**36**	**6.5**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**240**	~~H~~	**36**	**7.2**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**590**	~~H~~	**36**	**5.5**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**320**	~~H~~	**36**	**7.1**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**170**	~~H~~	**36**	**5.3**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**300**	~~H~~	**36**	**4.9**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	36 R	UH	36	5.6	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**370 J**	~~H~~	**36**	**4.6**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	36 R	UH	36	6.2	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**240 J**	~~H~~	**36**	**11**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	36 R	UH	36	11	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**81 J**	~~H~~	**36**	**7.9**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**250 J**	~~H~~	**36**	**5.5**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	H	26	20-150
Fluoranthene-d10	H	50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	10	12/19/2009 2115	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	62	U	62	16	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	62	U	62	18	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**93**		**62**	**9.5**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**580**		**62**	**11**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1000**		**62**	**12**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2700**		**62**	**9.3**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1400**		**62**	**12**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**570**		**62**	**9.0**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1200**		**62**	**8.4**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	62	U	62	9.5	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**1700**		**62**	**7.8**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	62	U	62	11	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1100**		**62**	**19**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	62	U	62	18	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**370**		**62**	**13**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**1100**		**62**	**9.3**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	100	12/19/2009 2148	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	530	U	530	130	ug/kg	1
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**230**	**J**	**530**	**150**	**ug/kg**	**1**
Anthracene	**120-12-7**	**8270D (SIM)**	**1200**		**530**	**81**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**4700**		**530**	**94**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**6200**		**530**	**110**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**14000**		**530**	**80**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**6600**		**530**	**100**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**4000**		**530**	**77**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**7000**		**530**	**72**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	530	U	530	81	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**14000**		**530**	**67**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	530	U	530	91	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**5700**		**530**	**160**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	530	U	530	150	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**3600**		**530**	**110**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**8100**		**530**	**80**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	10	12/19/2009 2221	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	72	U	72	18	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	72	U	72	21	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**99**		**72**	**11**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**620**		**72**	**13**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1100**		**72**	**14**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2700**		**72**	**11**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1300**		**72**	**14**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**550**		**72**	**10**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1300**		**72**	**9.8**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	72	U	72	11	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**1900**		**72**	**9.1**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	72	U	72	12	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1100**		**72**	**22**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	72	U	72	21	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**400**		**72**	**16**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**1400**		**72**	**11**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	20	12/19/2009 2254	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	120	U	120	29	ug/kg	1
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**55**	**J**	**120**	**34**	**ug/kg**	**1**
Anthracene	**120-12-7**	**8270D (SIM)**	**170**		**120**	**18**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**530**		**120**	**21**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1100**		**120**	**23**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2800**		**120**	**18**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1500**		**120**	**23**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**670**		**120**	**17**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1400**		**120**	**16**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	120	U	120	18	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**2100**		**120**	**15**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	120	U	120	20	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1200**		**120**	**35**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	120	U	120	34	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**440**		**120**	**25**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**1300**		**120**	**18**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	12/23/2009 0355	KSH	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	9.2	U	9.2	2.3	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	9.2	U	9.2	2.6	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**66**		**9.2**	**1.4**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**260**		**9.2**	**1.6**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**360**		**9.2**	**1.8**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**730**		**9.2**	**1.4**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**510**		**9.2**	**1.8**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**290**		**9.2**	**1.3**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**520**		**9.2**	**1.2**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**100**		**9.2**	**1.4**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**670**		**9.2**	**1.2**	**ug/kg**	**1**
Fluorene	**86-73-7**	**8270D (SIM)**	**10**		**9.2**	**1.6**	**ug/kg**	**1**
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**460**		**9.2**	**2.8**	**ug/kg**	**1**
Naphthalene	**91-20-3**	**8270D (SIM)**	**6.8**	**J**	**9.2**	**2.7**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**170**		**9.2**	**2.0**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**730**		**9.2**	**1.4**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		77	20-150
Fluoranthene-d10		98	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

JW 3/6/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/23/2009 0435	KSH	11/18/2009 2010	21984
2	3550C	8270D (SIM)	5	12/20/2009 1344	GLR	12/07/2009 1523	23116

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	24	U	24	6.2	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	24	U	24	7.0	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**20**	**J**	**24**	**3.8**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**88**		**24**	**4.4**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**130**		**24**	**4.9**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**270**		**24**	**3.7**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**180**		**24**	**4.8**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**93**		**24**	**3.6**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**160**		**24**	**3.3**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**59**		**24**	**3.8**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**220**		**24**	**3.1**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	24	U	24	4.2	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**160**		**24**	**7.4**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	24	U	24	7.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**49**		**24**	**5.3**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**180**		**24**	**3.7**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150	H	50	20-150
Fluoranthene-d10		109	20-150	H	102	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ccw 3/6/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/23/2009 0435	KSH	11/18/2009 2010	21984
2	3550C	8270D (SIM)	5	12/20/2009 1344	GLR	12/07/2009 1523	23116

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	25 R	UH	25	6.4	ug/kg	2 HT
Acenaphthylene	208-96-8	8270D (SIM)	25 R	UH	25	7.3	ug/kg	2
Anthracene	**120-12-7**	**8270D (SIM)**	**11 J**	**JH**	**25**	**3.9**	**ug/kg**	**2**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**24**	**JH**	**25**	**4.5**	**ug/kg**	**2**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**70**	**H**	**25**	**5.1**	**ug/kg**	**2**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**150**	**H**	**25**	**3.8**	**ug/kg**	**2**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**80**	**H**	**25**	**5.0**	**ug/kg**	**2**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**55**	**H**	**25**	**3.7**	**ug/kg**	**2**
Chrysene	**218-01-9**	**8270D (SIM)**	**79**	**H**	**25**	**3.5**	**ug/kg**	**2**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**22**	**JH**	**25**	**3.9**	**ug/kg**	**2**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**110**	**H**	**25**	**3.2**	**ug/kg**	**2**
Fluorene	86-73-7	8270D (SIM)	25 R	UH	25	4.4	ug/kg	2
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**75 J**	**H**	**25**	**7.7**	**ug/kg**	**2**
Naphthalene	91-20-3	8270D (SIM)	25 R	UH	25	7.5	ug/kg	2
Phenanthrene	**85-01-8**	**8270D (SIM)**	**26 J**	**H**	**25**	**5.5**	**ug/kg**	**2**
Pyrene	**129-00-0**	**8270D (SIM)**	**72 J**	**H**	**25**	**3.8**	**ug/kg**	**2**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

pw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7RE

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150	H	50	20-150
Fluoranthene-d10		109	20-150	H	102	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

KW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2233	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		52	20-150
Fluoranthene-d10		76	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2306	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		60	20-150
Fluoranthene-d10		69	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fuw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2340	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.21**	**0.020**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.025**	**J**	**0.21**	**0.019**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	**129-00-0**	**8270D (SIM)**	**0.023**	**J**	**0.21**	**0.018**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		58	20-150
Fluoranthene-d10		74	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0013	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.15**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**0.034**	**J**	**0.20**	**0.020**	**ug/L**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**0.083**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.092**	**J**	**0.20**	**0.018**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**0.037**	**J**	**0.20**	**0.023**	**ug/L**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**0.079**	**J**	**0.20**	**0.017**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150
Fluoranthene-d10		56	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0047	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		72	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0120	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**0.046**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.043**	**J**	**0.20**	**0.018**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	**91-20-3**	**8270D (SIM)**	**0.15**	**J**	**0.20**	**0.030**	**ug/L**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**0.029**	**J**	**0.20**	**0.023**	**ug/L**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**0.043**	**J**	**0.20**	**0.017**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		54	20-150
Fluoranthene-d10		61	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MEL 3/16/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0154	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.21**	**0.020**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.035**	**J**	**0.21**	**0.019**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	**91-20-3**	**8270D (SIM)**	**0.19**	**J**	**0.21**	**0.031**	**ug/L**	**1**
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	**129-00-0**	**8270D (SIM)**	**0.034**	**J**	**0.21**	**0.018**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		62	20-150
Fluoranthene-d10		62	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
3/6/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD106-0-0.5-09D	KK10035-001	Soil
2	IR86-SD105-0-0.5-09D	KK10035-002	Soil
3	IR86-SD108-0-0.5-09D	KK10035-003	Soil
4	IR86-SD109-0-0.5-09D	KK10035-004	Soil
5	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6	IR86-SD112-0-0.5-09D	KK10035-006	Soil
7	IR86-SD113-0-0.5-09D	KK10035-007	Soil
7MS	IR86-SD113-0-0.5-09DMS	KK10035-007MS	Soil
7MSD	IR86-SD113-0-0.5-09DMSD	KK10035-007MSD	Soil
7RE	IR86-SD113-0-0.5-09DRE	KK10035-007RE	Soil
-	NA - TB Sample	-	-
9	IR86-SW113-09D	KK10035-009	Water
10	IR86-EB01-111009-SD	KK10035-010	Water
-	Not Analyzed for PAH	-	-
-	Not Analyzed for PAH	-	-
13	IR86-SW108-09D	KK10035-013	Water
14	IR86-SW110-09D	KK10035-014	Water
15	IR86-SW112-09D	KK10035-015	Water
16	IR86-SW105-09D	KK10035-016	Water
17	IR86-SW105D-09D	KK10035-017	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1	11/08/09	12/08/09	30	J/R
7RE	11/08/09	12/07/09	29	J/R

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - Several samples exhibited "0D" surrogate recoveries due to being diluted out. No action was taken on this basis.

MS/MSD - MS/MSD samples 5 and 7 were analyzed at a dilution and the %R and RPD values were not valid. No action was taken on this basis.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D ug/L	IR86-SW105D-09D ug/L	RPD	Qualifier
Benzo(a)anthracene	0.14	0.14	0%	None
Benzo(b)fluoranthene	0.046	0.21 U	NC	None
Fluoranthene	0.043	0.035	21%	None
Naphthalene	0.15	0.19	24%	None
Phenanthrene	0.029	0.21 U	NC	None
Pyrene	0.043	0.034	23%	None

Compound Quantitation - Several samples were analyzed at a dilution due to high concentrations of target analytes.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/19/2009 1936	DC	12/08/2009 1820	23211

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	36	R UH	36	9.1	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	36	UH	36	10	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**23**	**J JH**	**36**	**5.6**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**100**	**H**	**36**	**6.5**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**240**	**H**	**36**	**7.2**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**530**	**H**	**36**	**5.5**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**320**	**H**	**36**	**7.1**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**170**	**H**	**36**	**5.3**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**300**	**H**	**36**	**4.9**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	36	R UH	36	5.6	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**370**	**J H**	**36**	**4.6**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	36	R UH	36	6.2	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**240**	**J H**	**36**	**11**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	36	R UH	36	11	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**81**	**J H**	**36**	**7.9**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**250**	**J H**	**36**	**5.5**	**ug/kg**	**1**

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	H	26	20-150
Fluoranthene-d10	H	50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW 3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

2

Client: **CH2M HILL, Inc.**
Description: IR86-SD105-0-0.5-09D
Date Sampled: 11/08/2009 1135
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	10	12/19/2009 2115	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	62	U	62	16	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	62	U	62	18	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**93**		**62**	**9.5**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**580**		**62**	**11**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1000**		**62**	**12**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2300**		**62**	**9.3**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1400**		**62**	**12**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**570**		**62**	**9.0**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1200**		**62**	**8.4**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	62	U	62	9.5	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**1700**		**62**	**7.8**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	62	U	62	11	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1100**		**62**	**19**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	62	U	62	18	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**370**		**62**	**13**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**1100**		**62**	**9.3**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW 3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

3

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	100	12/19/2009 2148	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	530	U	530	130	ug/kg	1
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**230**	**J**	**530**	**150**	**ug/kg**	**1**
Anthracene	**120-12-7**	**8270D (SIM)**	**1200**		**530**	**81**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**4700**		**530**	**94**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**6200**		**530**	**110**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**12000**		**530**	**80**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**6600**		**530**	**100**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**4000**		**530**	**77**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**7000**		**530**	**72**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	530	U	530	81	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**14000**		**530**	**67**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	530	U	530	91	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**5700**		**530**	**160**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	530	U	530	150	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**3600**		**530**	**110**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**8100**		**530**	**80**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

4

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: 11/08/2009 1530
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: 43.3 11/10/2009 **2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	10	12/19/2009 2221	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	72	U	72	18	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	72	U	72	21	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**99**		**72**	**11**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**620**		**72**	**13**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1100**		**72**	**14**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2300**		**72**	**11**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1300**		**72**	**14**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**550**		**72**	**10**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1300**		**72**	**9.8**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	72	U	72	11	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**1900**		**72**	**9.1**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	72	U	72	12	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1100**		**72**	**22**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	72	U	72	21	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**400**		**72**	**16**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**1400**		**72**	**11**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

5

Client: CH2M HILL, Inc.
Description: IR86-SD110-0-0.5-09D
Date Sampled: 11/08/2009 1600
Date Received: 11/10/2009

Laboratory ID: KK10035-005
Matrix: Solid
% Solids: 49.3 11/10/2009 2014

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	20	12/19/2009 2254	DC	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	120	U	120	29	ug/kg	1
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**55**	**J**	**120**	**34**	**ug/kg**	**1**
Anthracene	**120-12-7**	**8270D (SIM)**	**170**		**120**	**18**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**530**		**120**	**21**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**1100**		**120**	**23**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**2500**		**120**	**18**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**1500**		**120**	**23**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**670**		**120**	**17**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**1400**		**120**	**16**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	120	U	120	18	ug/kg	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**2100**		**120**	**15**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	120	U	120	20	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**1200**		**120**	**35**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	120	U	120	34	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**440**		**120**	**25**	**ug/kg**	**1**
Pyrene	129-00-0	8270D (SIM)	1300		120	18	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10	N	0.00	20-150
Fluoranthene-d10	N	0.00	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

6

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	12/23/2009 0355	KSH	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	9.2	U	9.2	2.3	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	9.2	U	9.2	2.6	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**66**		**9.2**	**1.4**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**240**		**9.2**	**1.6**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**360**		**9.2**	**1.8**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**730**		**9.2**	**1.4**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**510**		**9.2**	**1.8**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**290**		**9.2**	**1.3**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**520**		**9.2**	**1.2**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**100**		**9.2**	**1.4**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**670**		**9.2**	**1.2**	**ug/kg**	**1**
Fluorene	**86-73-7**	**8270D (SIM)**	**10**		**9.2**	**1.6**	**ug/kg**	**1**
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**460**		**9.2**	**2.8**	**ug/kg**	**1**
Naphthalene	**91-20-3**	**8270D (SIM)**	**6.8**	**J**	**9.2**	**2.7**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**170**		**9.2**	**2.0**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**730**		**9.2**	**1.4**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		77	20-150
Fluoranthene-d10		98	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

7

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/23/2009 0435	KSH	11/18/2009 2010	21984
2	3550C	8270D (SIM)	5	12/20/2009 1344	GLR	12/07/2009 1523	23116

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	24	U	24	6.2	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	24	U	24	7.0	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**20**	**J**	**24**	**3.8**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**140**		**24**	**4.4**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**160**		**24**	**4.9**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**270**		**24**	**3.7**	**ug/kg**	**1**
Benzo(g,h,I)perylene	**191-24-2**	**8270D (SIM)**	**180**		**24**	**4.8**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**93**		**24**	**3.6**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**160**		**24**	**3.3**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**59**		**24**	**3.8**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**220**		**24**	**3.1**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	24	U	24	4.2	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**160**		**24**	**7.4**	**ug/kg**	**1**
Naphthalene	91-20-3	8270D (SIM)	24	U	24	7.2	ug/kg	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**49**		**24**	**5.3**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**180**		**24**	**3.7**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150	H	50	20-150
Fluoranthene-d10		109	20-150	H	102	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW 3/18/10

Semivolatile Organic Compounds by GC/MS (SIM)

7RE

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	5	12/23/2009 0435	KSH	11/18/2009 2010	21984
2	3550C	8270D (SIM)	5	12/20/2009 1344	GLR	12/07/2009 1523	23116

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	25	R UH	25	6.4	ug/kg	2 HT
Acenaphthylene	208-96-8	8270D (SIM)	25	R UH	25	7.3	ug/kg	2
Anthracene	**120-12-7**	**8270D (SIM)**	**11**	**J H**	**25**	**3.9**	**ug/kg**	**2**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**24**	**J H**	**25**	**4.5**	**ug/kg**	**2**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**70**	**H**	**25**	**5.1**	**ug/kg**	**2**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**210**	**H**	**25**	**3.8**	**ug/kg**	**2**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**80**	**H**	**25**	**5.0**	**ug/kg**	**2**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**55**	**H**	**25**	**3.7**	**ug/kg**	**2**
Chrysene	**218-01-9**	**8270D (SIM)**	**79**	**H**	**25**	**3.5**	**ug/kg**	**2**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**22**	**J H**	**25**	**3.9**	**ug/kg**	**2**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**110**	**H**	**25**	**3.2**	**ug/kg**	**2**
Fluorene	86-73-7	8270D (SIM)	25	R UH	25	4.4	ug/kg	2
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**75**	**J H**	**25**	**7.7**	**ug/kg**	**2**
Naphthalene	91-20-3	8270D (SIM)	25	R UH	25	7.5	ug/kg	2
Phenanthrene	**85-01-8**	**8270D (SIM)**	**26**	**J H**	**25**	**5.5**	**ug/kg**	**2**
Pyrene	**129-00-0**	**8270D (SIM)**	**72**	**J H**	**25**	**3.8**	**ug/kg**	**2**

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW 3/18/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7RE

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150	H	50	20-150
Fluoranthene-d10		109	20-150	H	102	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

KW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2233	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		52	20-150
Fluoranthene-d10		76	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2306	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		60	20-150
Fluoranthene-d10		69	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fuw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/21/2009 2340	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.21**	**0.020**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.025**	**J**	**0.21**	**0.019**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	**129-00-0**	**8270D (SIM)**	**0.023**	**J**	**0.21**	**0.018**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		58	20-150
Fluoranthene-d10		74	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0013	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.15**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**0.034**	**J**	**0.20**	**0.020**	**ug/L**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**0.083**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.092**	**J**	**0.20**	**0.018**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	**85-01-8**	**8270D (SIM)**	**0.037**	**J**	**0.20**	**0.023**	**ug/L**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**0.079**	**J**	**0.20**	**0.017**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150
Fluoranthene-d10		56	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0047	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		72	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0120	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**0.046**	**J**	**0.20**	**0.019**	**ug/L**	**1**
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.043**	**J**	**0.20**	**0.018**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	**91-20-3**	**8270D (SIM)**	**0.15**	**J**	**0.20**	**0.030**	**ug/L**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**0.029**	**J**	**0.20**	**0.023**	**ug/L**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**0.043**	**J**	**0.20**	**0.017**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		54	20-150
Fluoranthene-d10		61	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MEL 3/16/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	11/22/2009 0154	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**0.14**	**J**	**0.21**	**0.020**	**ug/L**	**1**
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.064	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.035**	**J**	**0.21**	**0.019**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	**91-20-3**	**8270D (SIM)**	**0.19**	**J**	**0.21**	**0.031**	**ug/L**	**1**
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	**129-00-0**	**8270D (SIM)**	**0.034**	**J**	**0.21**	**0.018**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		62	20-150
Fluoranthene-d10		62	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
3/6/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1*	IR86-SD106-0-0.5-09D	KK10035-001	Soil
2*	IR86-SD105-0-0.5-09D	KK10035-002	Soil
3*	IR86-SD108-0-0.5-09D	KK10035-003	Soil
4*	IR86-SD109-0-0.5-09D	KK10035-004	Soil
5*	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS*	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD*	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6*	IR86-SD112-0-0.5-09D	KK10035-006	Soil
7*	IR86-SD113-0-0.5-09D	KK10035-007	Soil
-	NA - TB Sample	-	-
9	IR86-SW113-09D	KK10035-009	Water
10	IR86-EB01-111009-SD	KK10035-010	Water
-	Not Analyzed for Pest/PCB	-	-
-	Not Analyzed for Pest/PCB	-	-
13	IR86-SW108-09D	KK10035-013	Water
14	IR86-SW110-09D	KK10035-014	Water
15	IR86-SW112-09D	KK10035-015	Water
16	IR86-SW105-09D	KK10035-016	Water
17	IR86-SW105D-09D	KK10035-017	Water

* - PCB only

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D ug/L	IR86-SW105D-09D ug/L	RPD	Qualifier
Endosulfan II	0.040	0.039	3%	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0425	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		87	30-135
Tetrachloro-m-xylene		80	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0441	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0083	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		84	30-135
Tetrachloro-m-xylene		91	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0456	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	**319-86-8**	**8081B**	**0.014**	**J**	**0.026**	**0.0083**	**ug/L**	**1**
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		78	30-135
Tetrachloro-m-xylene		79	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0512	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		46	30-135
Tetrachloro-m-xylene		80	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0528	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		79	30-135
Tetrachloro-m-xylene		90	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/25/2009 2333	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	**33213-65-9**	**8081B**	**0.040**		**0.025**	**0.024**	**ug/L**	**1**
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		65	30-135
Tetrachloro-m-xylene		83	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result <.PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/25/2009 2348	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	**33213-65-9**	**8081B**	**0.039**		**0.026**	**0.024**	**ug/L**	**1**
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		46	30-135
Tetrachloro-m-xylene		83	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1412	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	71	U	71	2.4	ug/kg	1
Aroclor 1221	11104-28-2	8082A	140	U	140	21	ug/kg	1
Aroclor 1232	11141-16-5	8082A	71	U	71	7.1	ug/kg	1
Aroclor 1242	53469-21-9	8082A	71	U	71	5.0	ug/kg	1
Aroclor 1248	12672-29-6	8082A	71	U	71	8.2	ug/kg	1
Aroclor 1254	11097-69-1	8082A	71	U	71	3.9	ug/kg	1
Aroclor 1260	11096-82-5	8082A	71	U	71	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		93	60-125
Tetrachloro-m-xylene		86	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1425	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	70	U	70	2.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	140	U	140	21	ug/kg	1
Aroclor 1232	11141-16-5	8082A	70	U	70	7.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	70	U	70	4.9	ug/kg	1
Aroclor 1248	12672-29-6	8082A	70	U	70	8.1	ug/kg	1
Aroclor 1254	11097-69-1	8082A	70	U	70	3.8	ug/kg	1
Aroclor 1260	11096-82-5	8082A	70	U	70	12	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		100	60-125
Tetrachloro-m-xylene		87	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1437	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	50	U	50	1.7	ug/kg	1
Aroclor 1221	11104-28-2	8082A	100	U	100	15	ug/kg	1
Aroclor 1232	11141-16-5	8082A	50	U	50	5.0	ug/kg	1
Aroclor 1242	53469-21-9	8082A	50	U	50	3.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	50	U	50	5.7	ug/kg	1
Aroclor 1254	11097-69-1	8082A	50	U	50	2.7	ug/kg	1
Aroclor 1260	11096-82-5	8082A	50	U	50	8.6	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		113	60-125
Tetrachloro-m-xylene		87	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1450	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	75	U	75	2.5	ug/kg	1
Aroclor 1221	11104-28-2	8082A	150	U	150	22	ug/kg	1
Aroclor 1232	11141-16-5	8082A	75	U	75	7.5	ug/kg	1
Aroclor 1242	53469-21-9	8082A	75	U	75	5.2	ug/kg	1
Aroclor 1248	12672-29-6	8082A	75	U	75	8.7	ug/kg	1
Aroclor 1254	11097-69-1	8082A	75	U	75	4.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	75	U	75	13	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		88	60-125
Tetrachloro-m-xylene		81	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005** 5
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1503	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	64	U	64	2.1	ug/kg	1
Aroclor 1221	11104-28-2	8082A	130	U	130	19	ug/kg	1
Aroclor 1232	11141-16-5	8082A	64	U	64	6.4	ug/kg	1
Aroclor 1242	53469-21-9	8082A	64	U	64	4.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	64	U	64	7.4	ug/kg	1
Aroclor 1254	11097-69-1	8082A	64	U	64	3.5	ug/kg	1
Aroclor 1260	11096-82-5	8082A	64	U	64	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		103	60-125
Tetrachloro-m-xylene		89	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1540	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	94	U	94	3.1	ug/kg	1
Aroclor 1221	11104-28-2	8082A	190	U	190	28	ug/kg	1
Aroclor 1232	11141-16-5	8082A	94	U	94	9.4	ug/kg	1
Aroclor 1242	53469-21-9	8082A	94	U	94	6.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	94	U	94	11	ug/kg	1
Aroclor 1254	11097-69-1	8082A	94	U	94	5.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	94	U	94	16	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		78	60-125
Tetrachloro-m-xylene		77	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1553	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	51	U	51	1.7	ug/kg	1
Aroclor 1221	11104-28-2	8082A	100	U	100	15	ug/kg	1
Aroclor 1232	11141-16-5	8082A	51	U	51	5.1	ug/kg	1
Aroclor 1242	53469-21-9	8082A	51	U	51	3.5	ug/kg	1
Aroclor 1248	12672-29-6	8082A	51	U	51	5.8	ug/kg	1
Aroclor 1254	11097-69-1	8082A	51	U	51	2.8	ug/kg	1
Aroclor 1260	11096-82-5	8082A	51	U	51	8.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		76	60-125
Tetrachloro-m-xylene		77	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 1919	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		95	40-135
Tetrachloro-m-xylene		82	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 1932	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		96	40-135
Tetrachloro-m-xylene		101	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 1945	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		80	40-135
Tetrachloro-m-xylene		73	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 1957	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		50	40-135
Tetrachloro-m-xylene		76	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 2010	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		82	40-135
Tetrachloro-m-xylene		93	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lcw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 2022	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		65	40-135
Tetrachloro-m-xylene		76	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 2035	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.053	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.53	U	0.53	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.53	U	0.53	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		47	40-135
Tetrachloro-m-xylene		78	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW 3/6/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD106-0-0.5-09D	KK10035-001	Soil
1RE	IR86-SD106-0-0.5-09DRE	KK10035-001RE	Soil
2	IR86-SD105-0-0.5-09D	KK10035-002	Soil
3	IR86-SD108-0-0.5-09D	KK10035-003	Soil
4	IR86-SD109-0-0.5-09D	KK10035-004	Soil
4MS	IR86-SD109-0-0.5-09DMS	KK10035-004MS	Soil
4MSD	IR86-SD109-0-0.5-09DMSD	KK10035-004MSD	Soil
4RE	IR86-SD109-0-0.5-09DRE	KK10035-004RE	Soil
5	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6	IR86-SD112-0-0.5-09D	KK10035-006	Soil
7	IR86-SD113-0-0.5-09D	KK10035-007	Soil
7MS	IR86-SD113-0-0.5-09DMS	KK10035-007MS	Soil
7MSD	IR86-SD113-0-0.5-09DMSD	KK10035-007MSD	Soil
7RE	IR86-SD113-0-0.5-09DRE	KK10035-007RE	Soil
-	NA - TB Sample	-	-
9	IR86-SW113-09D	KK10035-009	Water
10	IR86-EB01-111009-SD	KK10035-010	Water
-	Not Analyzed for SVOC	-	-
-	Not Analyzed for SVOC	-	-
13	IR86-SW108-09D	KK10035-013	Water
14	IR86-SW110-09D	KK10035-014	Water
14MS	IR86-SW110-09DMS	KK10035-014MS	Water
14MSD	IR86-SW110-09DMSD	KK10035-014MSD	Water
14RE1	IR86-SW110-09DRE1	KK10035-014RE1	Water
14RE2	IR86-SW110-09DRE2	KK10035-014RE2	Water
15	IR86-SW112-09D	KK10035-015	Water
16	IR86-SW105-09D	KK10035-016	Water
17	IR86-SW105D-09D	KK10035-017	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1RE	11/08/09	12/08/09	30	J/R
4RE	11/08/09	12/08/09	30	J/R
7RE	11/08/09	12/07/09	29	J/R
14RE1	11/08/09	12/04/09	26	J/UJ
14RE2	11/08/09	12/14/09	36	J/R

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
1	2-Fluorobiphenyl	41%	J/UJ - Acid Cmpds
	2-Fluorophenol	34%	
	Phenol-d5	40%	
1RE	2-Fluorobiphenyl	42%	None for only 1 out
4	Phenol-d5	38%	None for only 1 out
7	Nitrobenzene-d5	33%	J/UJ - All Cmpds
	2-Fluorobiphenyl	34%	
	2-Fluorophenol	29%	
	Phenol-d5	28%	
14	Terphenyl-d14	38%	None for only 1 out
14RE1	2-Fluorobiphenyl	49%	None - See HT
	Terphenyl-d14	34%	
14RE2	Terphenyl-d14	33%	None for only 1 out

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
4	3,3'-Dichlorobenzidine	18%/23%/Ok	J/UJ
	2,4-Dinitrophenol	Ok/29%/Ok	
	Hexachlorocyclopentadiene	19%/18%/Ok	
5	1,1'-Biphenyl	Ok/Ok/21	None for RPD alone
	4-Chloroaniline	Ok/9.9%/49	J/R

5 (cont.)	3,3'-Dichlorobenzidine	16%/5.7%/93	J/R
	Hexachlorocyclopentadiene	17%/20%/Ok	J/UJ
	2,4,5-Trichlorophenol	Ok/159%/77	None - Sample ND
7	4-Chloroaniline	Ok/8.5%/66	J/R
	Many Compounds	Low %R/High RPD	None - See Surrogates
14	4-Chloroaniline	7.9%/7.5%/Ok	J/R
	22 Compounds	Low	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 23106	4-Chlorophenyl phenyl ether	22%	None	See HT
LCS 23219	3-Nitroaniline	11%	None	See HT
	Atrazine	0.7%	J/R	14RE1
	Carbazole	21%	None	See HT
	Di-n-octylphthalate	180%		
	n-Nitrosodiphenylamine	12%		

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
MB	4-Bromophenylphenylether	0.27	1.35	None	All ND
	4-Nitrophenol	0.50	2.5		

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-FB110909	bis(2-Ethylhexyl)phthalate	1.4	467	U	1, 1RE, 2, 3, 4, 4RE, 5, 6, 7RE
IR86-EB01-110909-SW	bis(2-Ethylhexyl)phthalate	1.4	14 ug/L	U	16, 17
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D ug/L	IR86-SW105D-09D ug/L	RPD	Qualifier
Di-n-butylphthalate	0.18	0.21	15%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - Several samples exhibited surrogate and/or internal standard deficiencies. Please see Form Is for samples results to use for reporting.

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2129	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0832	KSH	12/08/2009 1820	23210

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	2700	U	2700	190	ug/kg	1	
Atrazine	1912-24-9	8270D	2700	U	2700	180	ug/kg	1	
Benzaldehyde	100-52-7	8270D	2700	U	2700	180	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	2700	U	2700	110	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	2700	U	2700	100	ug/kg	1	
Butyl benzyl phthalate	85-68-7	8270D	2700	U	2700	240	ug/kg	1	
Caprolactam	105-60-2	8270D	2700	U	2700	180	ug/kg	1	
Carbazole	86-74-8	8270D	2700	U	2700	150	ug/kg	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	2700	UJ ~~U~~	2700	90	ug/kg	1	SSL
4-Chloroaniline	106-47-8	8270D	2700	U	2700	73	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	2700	U	2700	110	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	350	U	350	98	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	2700	U	2700	120	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	2700	U	2700	120	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	2700	UJ ~~U~~	2700	98	ug/kg	1	SSL
4-Chlorophenyl phenyl ether	7005-72-3	8270D	2700	U	2700	120	ug/kg	1	
Dibenzofuran	132-64-9	8270D	2700	U	2700	110	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	2700	U	2700	390	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	2700	UJ ~~U~~	2700	110	ug/kg	1	SSL
Diethylphthalate	84-66-2	8270D	2700	U	2700	120	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	2700	U	2700	120	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	2700	UJ ~~U~~	2700	130	ug/kg	1	SSL
Di-n-butyl phthalate	84-74-2	8270D	2700	U	2700	190	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	4200	UJ ~~U~~	4200	1400	ug/kg	1	SSL
2,4-Dinitrophenol	51-28-5	8270D	3500	UJ ~~U~~	3500	1200	ug/kg	1	SSL
2,4-Dinitrotoluene	121-14-2	8270D	2700	U	2700	190	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	2700	U	2700	180	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	2700	U	2700	340	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	2700 ~~140~~	U ~~U~~	**2700**	**130**	**ug/kg**	**1**	FBL
Hexachlorobenzene	118-74-1	8270D	2700	U	2700	160	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	2700	U	2700	120	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	2700	U	2700	260	ug/kg	1	
Hexachloroethane	67-72-1	8270D	2700	U	2700	95	ug/kg	1	
Isophorone	78-59-1	8270D	1900	U	1900	79	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	2700	U	2700	110	ug/kg	1	
2-Methylphenol	95-48-7	8270D	2700	UJ ~~U~~	2700	64	ug/kg	1	SSL
3 & 4-Methylphenol	106-44-5	8270D	720	UJ ~~U~~	720	130	ug/kg	1	SSL
2-Nitroaniline	88-74-4	8270D	2700	U	2700	250	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	2700	U	2700	420	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	2700	U	2700	200	ug/kg	1	
Nitrobenzene	98-95-3	8270D	2700	U	2700	58	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	2700	UJ ~~U~~	2700	190	ug/kg	1	SSL
4-Nitrophenol	100-02-7	8270D	3200	UJ ~~U~~	3200	1000	ug/kg	1	SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2129	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0832	KSH	12/08/2009 1820	23210

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	2700	U	2700	140	ug/kg	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	2700	U	2700	92	ug/kg	1
Pentachlorophenol	87-86-5	8270D	4500	UJ ~~U~~	4500	1500	ug/kg	1 SSL
Phenol	108-95-2	8270D	2700	~~U~~	2700	96	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	2700	~~U~~	2700	99	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	2700	~~U~~	2700	100	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		35	35-100	H	35	35-100
2-Fluorobiphenyl	N	41	45-105	HN	42	45-105
Terphenyl-d14		45	30-125	H	48	30-125
2-Fluorophenol	N	34	35-105	H	40	35-105
Phenol-d5	N	30	40-100	H	40	40-100
2,4,6-Tribromophenol		46	35-125	H	57	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

1 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2129	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0832	KSH	12/08/2009 1820	23210

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	550	R UH	550	39	ug/kg	2 HT
Atrazine	1912-24-9	8270D	550	UH	550	37	ug/kg	2
Benzaldehyde	100-52-7	8270D	550	UH	550	37	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	550	UH	550	22	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	550	UH	550	21	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	550	UH	550	48	ug/kg	2
Caprolactam	105-60-2	8270D	550	UH	550	37	ug/kg	2
Carbazole	**86-74-8**	**8270D**	**36**	**J JH**	**550**	**31**	**ug/kg**	**2**
4-Chloro-3-methyl phenol	59-50-7	8270D	550	R UH	550	18	ug/kg	2
4-Chloroaniline	106-47-8	8270D	550	UH	550	15	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	550	UH	550	22	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	72	UH	72	20	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	550	UH	550	24	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	550	UH	550	24	ug/kg	2
2-Chlorophenol	95-57-8	8270D	550	UH	550	20	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	550	UH	550	24	ug/kg	2
Dibenzofuran	132-64-9	8270D	550	UH	550	22	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	550	UH	550	79	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	550	UH	550	22	ug/kg	2
Diethylphthalate	84-66-2	8270D	550	UH	550	24	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	550	UH	550	24	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	550	UH	550	26	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	550	UH	550	39	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	850	UH	850	280	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	720	UH	720	240	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	550	UH	550	39	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	550	UH	550	37	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	550	UH	550	70	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	550 ~~84~~	R **UH**	**550**	**26**	**ug/kg**	**2** FBL
Hexachlorobenzene	118-74-1	8270D	550	R UH	550	33	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	550	UH	550	24	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	550	UH	550	53	ug/kg	2
Hexachloroethane	67-72-1	8270D	550	UH	550	19	ug/kg	2
Isophorone	78-59-1	8270D	390	UH	390	16	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	550	UH	550	22	ug/kg	2
2-Methylphenol	95-48-7	8270D	550	UH	550	13	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	150	UH	150	26	ug/kg	2
2-Nitroaniline	88-74-4	8270D	550	UH	550	50	ug/kg	2
3-Nitroaniline	99-09-2	8270D	550	UH	550	85	ug/kg	2
4-Nitroaniline	100-01-6	8270D	550	UH	550	42	ug/kg	2
Nitrobenzene	98-95-3	8270D	550	UH	550	12	ug/kg	2
2-Nitrophenol	88-75-5	8270D	550	UH	550	39	ug/kg	2
4-Nitrophenol	100-02-7	8270D	660	UH	660	210	ug/kg	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

kw 3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

1 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2129	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0832	KSH	12/08/2009 1820	23210

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	550	R UH	550	28	ug/kg	2 HT
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	550	UH	550	19	ug/kg	2
Pentachlorophenol	87-86-5	8270D	920	UH	920	310	ug/kg	2
Phenol	108-95-2	8270D	550	UH	550	20	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	550	UH	550	20	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	550	UH	550	21	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		35	35-100	H	35	35-100
2-Fluorobiphenyl	N	41	45-105	HN	42	45-105
Terphenyl-d14		45	30-125	H	48	30-125
2-Fluorophenol	N	34	35-105	H	40	35-105
Phenol-d5	N	30	40-100	H	40	40-100
2,4,6-Tribromophenol		46	35-125	H	57	35-125

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0758	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	930	U	930	67	ug/kg	1	
Atrazine	1912-24-9	8270D	930	U	930	64	ug/kg	1	
Benzaldehyde	100-52-7	8270D	930	U	930	64	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	930	U	930	37	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	930	U	930	37	ug/kg	1	
Butyl benzyl phthalate	**85-68-7**	**8270D**	**110**	**J**	**930**	**82**	**ug/kg**	**1**	
Caprolactam	105-60-2	8270D	930	U	930	64	ug/kg	1	
Carbazole	**86-74-8**	**8270D**	**170**	**J**	**930**	**52**	**ug/kg**	**1**	
4-Chloro-3-methyl phenol	59-50-7	8270D	930	U	930	31	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	930	U	930	25	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	930	U	930	37	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	120	U	120	34	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	930	U	930	41	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	930	U	930	41	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	930	U	930	34	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	930	U	930	41	ug/kg	1	
Dibenzofuran	132-64-9	8270D	930	U	930	37	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	930	U	930	130	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	930	U	930	37	ug/kg	1	
Diethylphthalate	84-66-2	8270D	930	U	930	41	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	930	U	930	41	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	930	U	930	45	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	930	U	930	67	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	1500	U	1500	490	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	1200	U	1200	410	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	930	U	930	67	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	930	U	930	64	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	930	U	930	120	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	930 ~~260~~	U	**930**	**45**	**ug/kg**	**1**	FBL
Hexachlorobenzene	118-74-1	8270D	930	U	930	56	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	930	U	930	41	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	930	U	930	90	ug/kg	1	
Hexachloroethane	67-72-1	8270D	930	U	930	33	ug/kg	1	
Isophorone	78-59-1	8270D	670	U	670	28	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	930	U	930	37	ug/kg	1	
2-Methylphenol	95-48-7	8270D	930	U	930	22	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	250	U	250	45	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	930	U	930	86	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	930	U	930	150	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	930	U	930	71	ug/kg	1	
Nitrobenzene	98-95-3	8270D	930	U	930	20	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	930	U	930	67	ug/kg	1	
4-Nitrophenol	100-02-7	8270D	1100	U	1100	360	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	930	U	930	49	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

CW
3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0758	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	930	U	930	32	ug/kg	1
Pentachlorophenol	87-86-5	8270D	1600	U	1600	520	ug/kg	1
Phenol	108-95-2	8270D	930	U	930	34	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	930	U	930	35	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	930	U	930	37	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		50	35-100
2-Fluorobiphenyl		49	45-105
Terphenyl-d14		44	30-125
2-Fluorophenol		46	35-105
Phenol-d5		43	40-100
2,4,6-Tribromophenol		60	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2209	MZ	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	2000	U	2000	140	ug/kg	1	
Atrazine	1912-24-9	8270D	2000	U	2000	140	ug/kg	1	
Benzaldehyde	100-52-7	8270D	2000	U	2000	140	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	2000	U	2000	80	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	2000	U	2000	78	ug/kg	1	
Butyl benzyl phthalate	**85-68-7**	**8270D**	**280**	**J**	**2000**	**180**	**ug/kg**	**1**	
Caprolactam	105-60-2	8270D	2000	U	2000	140	ug/kg	1	
Carbazole	**86-74-8**	**8270D**	**980**	**J**	**2000**	**110**	**ug/kg**	**1**	
4-Chloro-3-methyl phenol	59-50-7	8270D	2000	U	2000	67	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	2000	U	2000	54	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	2000	U	2000	80	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	260	U	260	73	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	2000	U	2000	88	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	2000	U	2000	88	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	2000	U	2000	73	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	2000	U	2000	88	ug/kg	1	
Dibenzofuran	132-64-9	8270D	2000	U	2000	80	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	2000	U	2000	290	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	2000	U	2000	80	ug/kg	1	
Diethylphthalate	84-66-2	8270D	2000	U	2000	88	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	2000	U	2000	88	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	2000	U	2000	96	ug/kg	1	
Di-n-butyl phthalate	**84-74-2**	**8270D**	**230**	**J**	**2000**	**140**	**ug/kg**	**1**	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	3100	U	3100	1000	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	2600	U	2600	880	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	2000	U	2000	140	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	2000	U	2000	140	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	2000	U	2000	260	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	2000 ~~510~~	U	**2000**	**96**	**ug/kg**	**1**	FBL
Hexachlorobenzene	118-74-1	8270D	2000	U	2000	120	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	2000	U	2000	88	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	2000	U	2000	190	ug/kg	1	
Hexachloroethane	67-72-1	8270D	2000	U	2000	71	ug/kg	1	
Isophorone	78-59-1	8270D	1400	U	1400	59	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	2000	U	2000	79	ug/kg	1	
2-Methylphenol	95-48-7	8270D	2000	U	2000	48	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	530	U	530	96	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	2000	U	2000	180	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	2000	U	2000	310	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	2000	U	2000	150	ug/kg	1	
Nitrobenzene	98-95-3	8270D	2000	U	2000	43	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	2000	U	2000	140	ug/kg	1	
4-Nitrophenol	100-02-7	8270D	2400	U	2400	770	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	2000	U	2000	100	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2209	MZ	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	2000	U	2000	69	ug/kg	1
Pentachlorophenol	87-86-5	8270D	3300	U	3300	1100	ug/kg	1
Phenol	108-95-2	8270D	2000	U	2000	72	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	2000	U	2000	74	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	2000	U	2000	78	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		52	35-100
2-Fluorobiphenyl		56	45-105
Terphenyl-d14		48	30-125
2-Fluorophenol		54	35-105
Phenol-d5		46	40-100
2,4,6-Tribromophenol		58	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2230	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0851	KSH	12/08/2009 1820	23210

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	2700	U	2700	200	ug/kg	1
Atrazine	1912-24-9	8270D	2700	U	2700	190	ug/kg	1
Benzaldehyde	100-52-7	8270D	2700	U	2700	190	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	2700	U	2700	110	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	2700	U	2700	110	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	2700	U	2700	240	ug/kg	1
Caprolactam	105-60-2	8270D	2700	U	2700	190	ug/kg	1
Carbazole	**86-74-8**	**8270D**	**220**	**J**	**2700**	**150**	**ug/kg**	**1**
4-Chloro-3-methyl phenol	59-50-7	8270D	2700	U	2700	91	ug/kg	1
4-Chloroaniline	106-47-8	8270D	2700	U	2700	74	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	2700	U	2700	110	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	360	U	360	100	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	2700	U	2700	120	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	2700	U	2700	120	ug/kg	1
2-Chlorophenol	95-57-8	8270D	2700	U	2700	100	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	2700	U	2700	120	ug/kg	1
Dibenzofuran	132-64-9	8270D	2700	U	2700	110	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	2700	UJ ~~U~~	2700	390	ug/kg	1 MSL
2,4-Dichlorophenol	120-83-2	8270D	2700	U	2700	110	ug/kg	1
Diethylphthalate	84-66-2	8270D	2700	U	2700	120	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	2700	U	2700	120	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	2700	U	2700	130	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	2700	U	2700	200	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	4200	U	4200	1400	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	3600	UJ ~~U~~	3600	1200	ug/kg	1 MSL
2,4-Dinitrotoluene	121-14-2	8270D	2700	U	2700	200	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	2700	U	2700	190	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	2700	U	2700	350	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	2700 ~~180~~	U ~~J~~	**2700**	**130**	**ug/kg**	**1** FBL
Hexachlorobenzene	118-74-1	8270D	2700	U	2700	160	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	2700	U	2700	120	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	2700	UJ ~~U~~	2700	260	ug/kg	1 MSL
Hexachloroethane	67-72-1	8270D	2700	U	2700	97	ug/kg	1
Isophorone	78-59-1	8270D	2000	U	2000	81	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	2700	U	2700	110	ug/kg	1
2-Methylphenol	95-48-7	8270D	2700	U	2700	65	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	730	U	730	130	ug/kg	1
2-Nitroaniline	88-74-4	8270D	2700	U	2700	250	ug/kg	1
3-Nitroaniline	99-09-2	8270D	2700	U	2700	420	ug/kg	1
4-Nitroaniline	100-01-6	8270D	2700	U	2700	210	ug/kg	1
Nitrobenzene	98-95-3	8270D	2700	U	2700	59	ug/kg	1
2-Nitrophenol	88-75-5	8270D	2700	U	2700	200	ug/kg	1
4-Nitrophenol	100-02-7	8270D	3300	U	3300	1000	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WO
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2230	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0851	KSH	12/08/2009 1820	23210

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	2700	U	2700	140	ug/kg	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	2700	U	2700	94	ug/kg	1
Pentachlorophenol	87-86-5	8270D	4600	U	4600	1500	ug/kg	1
Phenol	108-95-2	8270D	2700	U	2700	98	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	2700	U	2700	100	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	2700	U	2700	110	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		45	35-100	H	49	35-100
2-Fluorobiphenyl		48	45-105	H	47	45-105
Terphenyl-d14		50	30-125	H	44	30-125
2-Fluorophenol		49	35-105	H	50	35-105
Phenol-d5	N	38	40-100	H	45	40-100
2,4,6-Tribromophenol		58	35-125	H	62	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2230	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0851	KSH	12/08/2009 1820	23210

use original results

Parameter	CAS Number	Analytical Method	Result		Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	570	R	UH	570	41	ug/kg	2	HT
Atrazine	1912-24-9	8270D	570		UH	570	38	ug/kg	2	
Benzaldehyde	100-52-7	8270D	570		UH	570	38	ug/kg	2	
1,1'-Biphenyl	92-52-4	8270D	570		UH	570	23	ug/kg	2	
4-Bromophenyl phenyl ether	101-55-3	8270D	570		UH	570	22	ug/kg	2	
Butyl benzyl phthalate	**85-68-7**	**8270D**	**65**	J	**JH**	**570**	**50**	**ug/kg**	**2**	
Caprolactam	105-60-2	8270D	570	R	UH	570	38	ug/kg	2	
Carbazole	**86-74-8**	**8270D**	**160**	J	**JH**	**570**	**32**	**ug/kg**	**2**	
4-Chloro-3-methyl phenol	59-50-7	8270D	570	R	UH	570	19	ug/kg	2	
4-Chloroaniline	106-47-8	8270D	570		UH	570	15	ug/kg	2	
bis(2-Chloroethoxy)methane	111-91-1	8270D	570		UH	570	23	ug/kg	2	
bis(2-Chloroethyl)ether	111-44-4	8270D	75		UH	75	21	ug/kg	2	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	570		UH	570	25	ug/kg	2	
2-Chloronaphthalene	91-58-7	8270D	570		UH	570	25	ug/kg	2	
2-Chlorophenol	95-57-8	8270D	570		UH	570	21	ug/kg	2	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	570		UH	570	25	ug/kg	2	
Dibenzofuran	132-64-9	8270D	570		UH	570	23	ug/kg	2	
3,3'-Dichlorobenzidine	91-94-1	8270D	570		UH	570	81	ug/kg	2	
2,4-Dichlorophenol	120-83-2	8270D	570		UH	570	23	ug/kg	2	
Diethylphthalate	84-66-2	8270D	570		UH	570	25	ug/kg	2	
Dimethyl phthalate	131-11-3	8270D	570		UH	570	25	ug/kg	2	
2,4-Dimethylphenol	105-67-9	8270D	570		UH	570	27	ug/kg	2	
Di-n-butyl phthalate	**84-74-2**	**8270D**	**63**	J	**JH**	**570**	**41**	**ug/kg**	**2**	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	880	R	UH	880	290	ug/kg	2	
2,4-Dinitrophenol	51-28-5	8270D	750		UH	750	250	ug/kg	2	
2,4-Dinitrotoluene	121-14-2	8270D	570		UH	570	41	ug/kg	2	
2,6-Dinitrotoluene	606-20-2	8270D	570		UH	570	38	ug/kg	2	
Di-n-octylphthalate	117-84-0	8270D	570		UH	570	72	ug/kg	2	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	570 ~~**180**~~	R	**JH**	**570**	**27**	**ug/kg**	**2**	~~EBL~~
Hexachlorobenzene	118-74-1	8270D	570	R	UH	570	34	ug/kg	2	
Hexachlorobutadiene	87-68-3	8270D	570		UH	570	25	ug/kg	2	
Hexachlorocyclopentadiene	77-47-4	8270D	570		UH	570	54	ug/kg	2	
Hexachloroethane	67-72-1	8270D	570		UH	570	20	ug/kg	2	
Isophorone	78-59-1	8270D	410		UH	410	17	ug/kg	2	
2-Methylnaphthalene	91-57-6	8270D	570		UH	570	22	ug/kg	2	
2-Methylphenol	95-48-7	8270D	570		UH	570	14	ug/kg	2	
3 & 4-Methylphenol	106-44-5	8270D	150		UH	150	27	ug/kg	2	
2-Nitroaniline	88-74-4	8270D	570		UH	570	52	ug/kg	2	
3-Nitroaniline	99-09-2	8270D	570		UH	570	88	ug/kg	2	
4-Nitroaniline	100-01-6	8270D	570		UH	570	43	ug/kg	2	
Nitrobenzene	98-95-3	8270D	570		UH	570	12	ug/kg	2	
2-Nitrophenol	88-75-5	8270D	570		UH	570	41	ug/kg	2	
4-Nitrophenol	100-02-7	8270D	680		UH	680	220	ug/kg	2	

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/04/2009 2230	MZ	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0851	KSH	12/08/2009 1820	23210

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	570	R UH	570	29	ug/kg	2 HT
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	570	UH	570	19	ug/kg	2
Pentachlorophenol	87-86-5	8270D	950	UH	950	320	ug/kg	2
Phenol	108-95-2	8270D	570	UH	570	20	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	570	UH	570	21	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	570	UH	570	22	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		45	35-100	H	49	35-100
2-Fluorobiphenyl		48	45-105	H	47	45-105
Terphenyl-d14		50	30-125	H	44	30-125
2-Fluorophenol		49	35-105	H	50	35-105
Phenol-d5	N	38	40-100	H	45	40-100
2,4,6-Tribromophenol		58	35-125	H	62	35-125

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/07/2009 0020	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	2500	U	2500	180	ug/kg	1	
Atrazine	1912-24-9	8270D	2500	U	2500	170	ug/kg	1	
Benzaldehyde	100-52-7	8270D	2500	U	2500	170	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	2500	U	2500	100	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	2500	U	2500	98	ug/kg	1	
Butyl benzyl phthalate	85-68-7	8270D	2500	U	2500	220	ug/kg	1	
Caprolactam	105-60-2	8270D	2500	U	2500	170	ug/kg	1	
Carbazole	**86-74-8**	**8270D**	**240**	**J**	**2500**	**140**	**ug/kg**	**1**	
4-Chloro-3-methyl phenol	59-50-7	8270D	2500	U	2500	84	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	2500	R ~~U~~	2500	68	ug/kg	1	MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	2500	U	2500	100	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	330	U	330	92	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	2500	U	2500	110	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	2500	U	2500	110	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	2500	U	2500	92	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	2500	U	2500	110	ug/kg	1	
Dibenzofuran	132-64-9	8270D	2500	U	2500	100	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	2500	R ~~U~~	2500	360	ug/kg	1	MSL
2,4-Dichlorophenol	120-83-2	8270D	2500	U	2500	100	ug/kg	1	
Diethylphthalate	84-66-2	8270D	2500	U	2500	110	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	2500	U	2500	110	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	2500	U	2500	120	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	2500	U	2500	180	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	3900	U	3900	1300	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	3300	U	3300	1100	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	2500	U	2500	180	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	2500	U	2500	170	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	2500	U	2500	320	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	2500 ~~240~~	U ~~J~~	**2500**	**120**	**ug/kg**	**1**	FBL
Hexachlorobenzene	118-74-1	8270D	2500	U	2500	150	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	2500	U	2500	110	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	2500 UJ	~~U~~	2500	240	ug/kg	1	MSL
Hexachloroethane	67-72-1	8270D	2500	U	2500	89	ug/kg	1	
Isophorone	78-59-1	8270D	1800	U	1800	74	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	2500	U	2500	99	ug/kg	1	
2-Methylphenol	95-48-7	8270D	2500	U	2500	60	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	670	U	670	120	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	2500	U	2500	230	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	2500	U	2500	390	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	2500	U	2500	190	ug/kg	1	
Nitrobenzene	98-95-3	8270D	2500	U	2500	54	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	2500	U	2500	180	ug/kg	1	
4-Nitrophenol	100-02-7	8270D	3000	U	3000	960	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	2500	U	2500	130	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	5	12/07/2009 0020	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	2500	U	2500	86	ug/kg	1
Pentachlorophenol	87-86-5	8270D	4200	U	4200	1400	ug/kg	1
Phenol	108-95-2	8270D	2500	U	2500	90	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	2500	U	2500	93	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	2500	U	2500	98	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		58	35-100
2-Fluorobiphenyl		60	45-105
Terphenyl-d14		49	30-125
2-Fluorophenol		57	35-105
Phenol-d5		54	40-100
2,4,6-Tribromophenol		52	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0838	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	1400	U	1400	100	ug/kg	1
Atrazine	1912-24-9	8270D	1400	U	1400	94	ug/kg	1
Benzaldehyde	100-52-7	8270D	1400	U	1400	94	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	1400	U	1400	56	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1400	U	1400	54	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	1400	U	1400	120	ug/kg	1
Caprolactam	105-60-2	8270D	1400	U	1400	94	ug/kg	1
Carbazole	86-74-8	8270D	1400	U	1400	78	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1400	U	1400	47	ug/kg	1
4-Chloroaniline	106-47-8	8270D	1400	U	1400	38	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	1400	U	1400	56	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	180	U	180	51	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1400	U	1400	61	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	1400	U	1400	61	ug/kg	1
2-Chlorophenol	95-57-8	8270D	1400	U	1400	51	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	1400	U	1400	61	ug/kg	1
Dibenzofuran	132-64-9	8270D	1400	U	1400	56	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	1400	U	1400	200	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	1400	U	1400	56	ug/kg	1
Diethylphthalate	84-66-2	8270D	1400	U	1400	61	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	1400	U	1400	61	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	1400	U	1400	67	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	1400	U	1400	100	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	2200	U	2200	720	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	1800	U	1800	610	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	1400	U	1400	100	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	1400	U	1400	94	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	1400	U	1400	180	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	1400 ~~120~~	U ✓	**1400**	**67**	**ug/kg**	**1** FBL
Hexachlorobenzene	118-74-1	8270D	1400	U	1400	83	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	1400	U	1400	61	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	1400	U	1400	130	ug/kg	1
Hexachloroethane	67-72-1	8270D	1400	U	1400	49	ug/kg	1
Isophorone	78-59-1	8270D	1000	U	1000	41	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	1400	U	1400	55	ug/kg	1
2-Methylphenol	95-48-7	8270D	1400	U	1400	33	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	370	U	370	67	ug/kg	1
2-Nitroaniline	88-74-4	8270D	1400	U	1400	130	ug/kg	1
3-Nitroaniline	99-09-2	8270D	1400	U	1400	220	ug/kg	1
4-Nitroaniline	100-01-6	8270D	1400	U	1400	110	ug/kg	1
Nitrobenzene	98-95-3	8270D	1400	U	1400	30	ug/kg	1
2-Nitrophenol	88-75-5	8270D	1400	U	1400	100	ug/kg	1
4-Nitrophenol	100-02-7	8270D	1700	U	1700	530	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	1400	U	1400	72	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0838	GLR	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	1400	U	1400	48	ug/kg	1
Pentachlorophenol	87-86-5	8270D	2300	U	2300	780	ug/kg	1
Phenol	108-95-2	8270D	1400	U	1400	50	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	1400	U	1400	52	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	1400	U	1400	54	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	35-100
2-Fluorobiphenyl		48	45-105
Terphenyl-d14		48	30-125
2-Fluorophenol		48	35-105
Phenol-d5		46	40-100
2,4,6-Tribromophenol		67	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0858	GLR	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0949	KSH	12/07/2009 1523	23106

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	740	UJ U	740	53	ug/kg	1 SSL
Atrazine	1912-24-9	8270D	740	U	740	50	ug/kg	1
Benzaldehyde	100-52-7	8270D	740	U	740	50	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	740	U	740	30	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	740	U	740	29	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	740	U	740	65	ug/kg	1
Caprolactam	105-60-2	8270D	740	U	740	50	ug/kg	1
Carbazole	86-74-8	8270D	740	U	740	42	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	740	U	740	25	ug/kg	1
4-Chloroaniline	106-47-8	8270D	740 R	U	740	20	ug/kg	1 MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	740 UJ	U	740	30	ug/kg	1 SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	98	U	98	27	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	740	U	740	33	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	740	U	740	33	ug/kg	1
2-Chlorophenol	95-57-8	8270D	740	U	740	27	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	740	U	740	33	ug/kg	1
Dibenzofuran	132-64-9	8270D	740	U	740	30	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	740	U	740	110	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	740	U	740	30	ug/kg	1
Diethylphthalate	84-66-2	8270D	740	U	740	33	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	740	U	740	33	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	740	U	740	36	ug/kg	1
Di-n-butyl phthalate	84-74-2	8270D	740	U	740	53	ug/kg	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	1200	U	1200	390	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	980	U	980	330	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	740	U	740	53	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	740	U	740	50	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	740	U	740	95	ug/kg	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	740	U	740	36	ug/kg	1
Hexachlorobenzene	118-74-1	8270D	740	U	740	44	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	740	U	740	33	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	740	U	740	71	ug/kg	1
Hexachloroethane	67-72-1	8270D	740	U	740	26	ug/kg	1
Isophorone	78-59-1	8270D	530	U	530	22	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	740	U	740	29	ug/kg	1
2-Methylphenol	95-48-7	8270D	740	U	740	18	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	200	U	200	36	ug/kg	1
2-Nitroaniline	88-74-4	8270D	740	U	740	68	ug/kg	1
3-Nitroaniline	99-09-2	8270D	740	U	740	120	ug/kg	1
4-Nitroaniline	100-01-6	8270D	740	U	740	56	ug/kg	1
Nitrobenzene	98-95-3	8270D	740	U	740	16	ug/kg	1
2-Nitrophenol	88-75-5	8270D	740	U	740	53	ug/kg	1
4-Nitrophenol	100-02-7	8270D	890	U	890	280	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

kW
3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0858	GLR	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0949	KSH	12/07/2009 1523	23106

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	740 UJ	U	740	39	ug/kg	1 SSL
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	740	U	740	26	ug/kg	1
Pentachlorophenol	87-86-5	8270D	1200	U	1200	420	ug/kg	1
Phenol	108-95-2	8270D	740	U	740	27	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	740	U	740	28	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	740	U	740	29	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RLW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	33	35-100	HN	30	35-100
2-Fluorobiphenyl	N	34	45-105	HN	28	45-105
Terphenyl-d14		53	30-125	H	48	30-125
2-Fluorophenol	N	29	35-105	HN	30	35-105
Phenol-d5	N	28	40-100	HN	30	40-100
2,4,6-Tribromophenol		66	35-125	H	58	35-125

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0858	GLR	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0949	KSH	12/07/2009 1523	23106

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	380	UH	380	28	ug/kg	2
Atrazine	1912-24-9	8270D	380	UH	380	26	ug/kg	2
Benzaldehyde	100-52-7	8270D	380	UH	380	26	ug/kg	2
1,1'-Biphenyl	92-52-4	8270D	380	UH	380	15	ug/kg	2
4-Bromophenyl phenyl ether	101-55-3	8270D	380	UH	380	15	ug/kg	2
Butyl benzyl phthalate	85-68-7	8270D	380	UH	380	34	ug/kg	2
Caprolactam	105-60-2	8270D	380	UH	380	26	ug/kg	2
Carbazole	86-74-8	8270D	380	UH	380	22	ug/kg	2
4-Chloro-3-methyl phenol	59-50-7	8270D	380	UH	380	13	ug/kg	2
4-Chloroaniline	106-47-8	8270D	380	UH	380	10	ug/kg	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	380	UH	380	15	ug/kg	2
bis(2-Chloroethyl)ether	111-44-4	8270D	51	UH	51	14	ug/kg	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	380	UH	380	17	ug/kg	2
2-Chloronaphthalene	91-58-7	8270D	380	UH	380	17	ug/kg	2
2-Chlorophenol	95-57-8	8270D	380	UH	380	14	ug/kg	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	380	UH	380	17	ug/kg	2
Dibenzofuran	132-64-9	8270D	380	UH	380	15	ug/kg	2
3,3'-Dichlorobenzidine	91-94-1	8270D	380	UH	380	55	ug/kg	2
2,4-Dichlorophenol	120-83-2	8270D	380	UH	380	15	ug/kg	2
Diethylphthalate	84-66-2	8270D	380	UH	380	17	ug/kg	2
Dimethyl phthalate	131-11-3	8270D	380	UH	380	17	ug/kg	2
2,4-Dimethylphenol	105-67-9	8270D	380	UH	380	18	ug/kg	2
Di-n-butyl phthalate	84-74-2	8270D	380	UH	380	28	ug/kg	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	600	UH	600	200	ug/kg	2
2,4-Dinitrophenol	51-28-5	8270D	510	UH	510	170	ug/kg	2
2,4-Dinitrotoluene	121-14-2	8270D	380	UH	380	28	ug/kg	2
2,6-Dinitrotoluene	606-20-2	8270D	380	UH	380	26	ug/kg	2
Di-n-octylphthalate	117-84-0	8270D	380	UH	380	49	ug/kg	2
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	380 ~~40~~	UH	**380**	**18**	**ug/kg**	**2**
Hexachlorobenzene	118-74-1	8270D	380	UH	380	23	ug/kg	2
Hexachlorobutadiene	87-68-3	8270D	380	UH	380	17	ug/kg	2
Hexachlorocyclopentadiene	77-47-4	8270D	380	UH	380	37	ug/kg	2
Hexachloroethane	67-72-1	8270D	380	UH	380	14	ug/kg	2
Isophorone	78-59-1	8270D	280	UH	280	11	ug/kg	2
2-Methylnaphthalene	91-57-6	8270D	380	UH	380	15	ug/kg	2
2-Methylphenol	95-48-7	8270D	380	UH	380	9.2	ug/kg	2
3 & 4-Methylphenol	106-44-5	8270D	100	UH	100	18	ug/kg	2
2-Nitroaniline	88-74-4	8270D	380	UH	380	35	ug/kg	2
3-Nitroaniline	99-09-2	8270D	380	UH	380	60	ug/kg	2
4-Nitroaniline	100-01-6	8270D	380	UH	380	29	ug/kg	2
Nitrobenzene	98-95-3	8270D	380	UH	380	8.3	ug/kg	2
2-Nitrophenol	88-75-5	8270D	380	UH	380	28	ug/kg	2
4-Nitrophenol	100-02-7	8270D	460	UH	460	150	ug/kg	2

R HT R FBC

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

CW 3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	2	12/07/2009 0858	GLR	11/18/2009 2010	21983
2	3550C	8270D	1	12/14/2009 0949	KSH	12/07/2009 1523	23106

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	380	UH	380	20	ug/kg	2
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	380	UH	380	13	ug/kg	2
Pentachlorophenol	87-86-5	8270D	650	UH	650	220	ug/kg	2
Phenol	108-95-2	8270D	380	UH	380	14	ug/kg	2
2,4,5-Trichlorophenol	95-95-4	8270D	380	UH	380	14	ug/kg	2
2,4,6-Trichlorophenol	88-06-2	8270D	380	UH	380	15	ug/kg	2

R HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	33	35-100	HN	30	35-100
2-Fluorobiphenyl	N	34	45-105	HN	28	45-105
Terphenyl-d14		53	30-125	H	48	30-125
2-Fluorophenol	N	29	35-105	HN	30	35-105
Phenol-d5	N	28	40-100	HN	30	40-100
2,4,6-Tribromophenol		66	35-125	H	58	35-125

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1807	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	U	5.2	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.062	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

UW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1807	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	40-110
2-Fluorobiphenyl		52	50-110
Terphenyl-d14		50	50-135
2-Fluorophenol		47	20-110
Phenol-d5		48	10-115
2,4,6-Tribromophenol		56	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1827	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.094	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	U	5.2	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.093	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SD**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-010**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1827	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		58	40-110
2-Fluorobiphenyl		58	50-110
Terphenyl-d14		54	50-135
2-Fluorophenol		54	20-110
Phenol-d5		52	10-115
2,4,6-Tribromophenol		47	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

uw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1847	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	U	5.2	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.062	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LEW
3/16/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/04/2009 1847	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		48	40-110
2-Fluorobiphenyl		55	50-110
Terphenyl-d14		51	50-135
2-Fluorophenol		44	20-110
Phenol-d5		48	10-115
2,4,6-Tribromophenol		64	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

JEW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	UJ U	10	0.33	ug/L	1	MSL
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1	MSL
Benzaldehyde	100-52-7	8270D	10	UJ ~~U~~	10	1.0	ug/L	1	MSL
1,1'-Biphenyl	92-52-4	8270D	5.1	UJ ~~U~~	5.1	0.20	ug/L	1	MSL
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.1	R ~~U~~	5.1	0.22	ug/L	1	MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	UJ U	5.1	0.18	ug/L	1	MSL
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	UJ ~~U~~	1.0	0.20	ug/L	1	MSL
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1	
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0	UJ ~~U~~	1.0	0.14	ug/L	1	MSL
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	UJ ~~U~~	1.0	0.40	ug/L	1	MSL
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1	
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	UJ ~~U~~	1.0	0.091	ug/L	1	MSL
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	UJ ~~U~~	5.1	0.11	ug/L	1	MSL
Hexachlorobenzene	118-74-1	8270D	1.0	UJ ~~U~~	1.0	0.17	ug/L	1	MSL
Hexachlorobutadiene	87-68-3	8270D	1.0	UJ ~~U~~	1.0	0.12	ug/L	1	MSL
Hexachlorocyclopentadiene	77-47-4	8270D	10	~~U~~	10	0.23	ug/L	1	
Hexachloroethane	67-72-1	8270D	5.1	~~U~~	5.1	0.22	ug/L	1	
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	UJ ~~U~~	1.0	0.18	ug/L	1	MSL
2-Methylphenol	95-48-7	8270D	1.0	UJ ~~U~~	1.0	0.31	ug/L	1	MSL
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.34	ug/L	1	
3-Nitroaniline	99-09-2	8270D	10	UJ ~~U~~	10	0.23	ug/L	1	MSL
4-Nitroaniline	100-01-6	8270D	2.0	UJ ~~U~~	2.0	0.19	ug/L	1	MSL
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	UJ ~~U~~	10	0.40	ug/L	1	MSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
3/8/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0 W	~~J~~	1.0	0.22	ug/L	1 MSL
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	40-110		53	40-110	H	54	40-110
2-Fluorobiphenyl		55	50-110	N	49	50-110	H	54	50-110
Terphenyl-d14	N	38	50-135	N	34	50-135	HN	33	50-135
2-Fluorophenol		48	20-110		47	20-110	H	51	20-110
Phenol-d5		54	10-115		52	10-115	H	48	10-115
2,4,6-Tribromophenol		77	40-125		61	40-125	H	69	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14RE1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

Use original

Parameter	CAS Number	Analytical Method	Result		Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	UJ	U	10	0.33	ug/L	2	HT
Atrazine	1912-24-9	8270D	10	R	U	10	0.20	ug/L	2	BSL
Benzaldehyde	100-52-7	8270D	10	UJ	U	10	1.0	ug/L	2	HT
1,1'-Biphenyl	92-52-4	8270D	5.1		U	5.1	0.20	ug/L	2	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0		U	1.0	0.14	ug/L	2	
Butyl benzyl phthalate	85-68-7	8270D	2.0		U	2.0	0.092	ug/L	2	
Caprolactam	**105-60-2**	**8270D**	**2.2**	J	**U**	**10**	**1.2**	**ug/L**	**2**	
Carbazole	86-74-8	8270D	1.0	UJ	U	1.0	0.061	ug/L	2	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0		U	1.0	0.19	ug/L	2	
4-Chloroaniline	106-47-8	8270D	5.1		U	5.1	0.22	ug/L	2	
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1		U	5.1	0.18	ug/L	2	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0		U	1.0	0.23	ug/L	2	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0		U	1.0	0.19	ug/L	2	
2-Chloronaphthalene	91-58-7	8270D	1.0		U	1.0	0.17	ug/L	2	
2-Chlorophenol	95-57-8	8270D	1.0		U	1.0	0.20	ug/L	2	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1		U	5.1	0.20	ug/L	2	
Dibenzofuran	132-64-9	8270D	1.0		U	1.0	0.19	ug/L	2	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1		U	5.1	0.59	ug/L	2	
2,4-Dichlorophenol	120-83-2	8270D	1.0		U	1.0	0.21	ug/L	2	
Diethylphthalate	84-66-2	8270D	1.0		U	1.0	0.14	ug/L	2	
Dimethyl phthalate	131-11-3	8270D	5.1		U	5.1	0.11	ug/L	2	
2,4-Dimethylphenol	105-67-9	8270D	1.0		U	1.0	0.40	ug/L	2	
Di-n-butyl phthalate	84-74-2	8270D	5.1		U	5.1	0.061	ug/L	2	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10		U	10	0.59	ug/L	2	
2,4-Dinitrophenol	51-28-5	8270D	5.1		U	5.1	0.44	ug/L	2	
2,4-Dinitrotoluene	121-14-2	8270D	2.0		U	2.0	0.26	ug/L	2	
2,6-Dinitrotoluene	606-20-2	8270D	10		U	10	0.39	ug/L	2	
Di-n-octylphthalate	117-84-0	8270D	1.0		U	1.0	0.091	ug/L	2	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1		U	5.1	0.11	ug/L	2	
Hexachlorobenzene	118-74-1	8270D	1.0		U	1.0	0.17	ug/L	2	
Hexachlorobutadiene	87-68-3	8270D	1.0		U	1.0	0.12	ug/L	2	
Hexachlorocyclopentadiene	77-47-4	8270D	10		U	10	0.23	ug/L	2	
Hexachloroethane	67-72-1	8270D	5.1		U	5.1	0.22	ug/L	2	
Isophorone	78-59-1	8270D	5.1		U	5.1	0.21	ug/L	2	
2-Methylnaphthalene	91-57-6	8270D	1.0		U	1.0	0.18	ug/L	2	
2-Methylphenol	95-48-7	8270D	1.0		U	1.0	0.31	ug/L	2	
3 & 4-Methylphenol	106-44-5	8270D	2.0		U	2.0	0.65	ug/L	2	
2-Nitroaniline	88-74-4	8270D	2.0		U	2.0	0.34	ug/L	2	
3-Nitroaniline	99-09-2	8270D	10		U	10	0.23	ug/L	2	
4-Nitroaniline	100-01-6	8270D	2.0		U	2.0	0.19	ug/L	2	
Nitrobenzene	98-95-3	8270D	1.0		U	1.0	0.26	ug/L	2	
2-Nitrophenol	88-75-5	8270D	10		U	10	0.40	ug/L	2	

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW
3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14RE1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
4-Nitrophenol	100-02-7	8270D	5.1 UJ	U	5.1	0.43	ug/L	2 HT
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	2
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	2
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	2
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	2
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	2
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	40-110		53	40-110	H	54	40-110
2-Fluorobiphenyl		55	50-110	N	49	50-110	H	54	50-110
Terphenyl-d14	N	38	50-135	N	34	50-135	HN	33	50-135
2-Fluorophenol		48	20-110		47	20-110	H	51	20-110
Phenol-d5		54	10-115		52	10-115	H	48	10-115
2,4,6-Tribromophenol		77	40-125		61	40-125	H	69	40-125

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14 RE2

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	R UH	10	0.33	ug/L	3 HT
Atrazine	1912-24-9	8270D	10	UH	10	0.21	ug/L	3
Benzaldehyde	100-52-7	8270D	10	UH	10	1.0	ug/L	3
1,1'-Biphenyl	92-52-4	8270D	5.2	UH	5.2	0.21	ug/L	3
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	UH	1.0	0.15	ug/L	3
Butyl benzyl phthalate	85-68-7	8270D	2.1	UH	2.1	0.094	ug/L	3
Caprolactam	105-60-2	8270D	10	UH	10	1.3	ug/L	3
Carbazole	86-74-8	8270D	1.0	UH	1.0	0.063	ug/L	3
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	UH	1.0	0.20	ug/L	3
4-Chloroaniline	106-47-8	8270D	5.2	UH	5.2	0.23	ug/L	3
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	UH	5.2	0.19	ug/L	3
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	UH	1.0	0.24	ug/L	3
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	UH	1.0	0.20	ug/L	3
2-Chloronaphthalene	91-58-7	8270D	1.0	UH	1.0	0.18	ug/L	3
2-Chlorophenol	95-57-8	8270D	1.0	UH	1.0	0.21	ug/L	3
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	UH	5.2	0.21	ug/L	3
Dibenzofuran	132-64-9	8270D	1.0	UH	1.0	0.20	ug/L	3
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	UH	5.2	0.60	ug/L	3
2,4-Dichlorophenol	120-83-2	8270D	1.0	UH	1.0	0.22	ug/L	3
Diethylphthalate	84-66-2	8270D	1.0	UH	1.0	0.15	ug/L	3
Dimethyl phthalate	131-11-3	8270D	5.2	UH	5.2	0.11	ug/L	3
2,4-Dimethylphenol	105-67-9	8270D	1.0	UH	1.0	0.41	ug/L	3
Di-n-butyl phthalate	84-74-2	8270D	5.2	UH	5.2	0.063	ug/L	3
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	UH	10	0.60	ug/L	3
2,4-Dinitrophenol	51-28-5	8270D	5.2	UH	5.2	0.45	ug/L	3
2,4-Dinitrotoluene	121-14-2	8270D	2.1	UH	2.1	0.26	ug/L	3
2,6-Dinitrotoluene	606-20-2	8270D	10	UH	10	0.40	ug/L	3
Di-n-octylphthalate	117-84-0	8270D	1.0	UH	1.0	0.093	ug/L	3
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	UH	5.2	0.11	ug/L	3
Hexachlorobenzene	118-74-1	8270D	1.0	UH	1.0	0.18	ug/L	3
Hexachlorobutadiene	87-68-3	8270D	1.0	UH	1.0	0.13	ug/L	3
Hexachlorocyclopentadiene	77-47-4	8270D	10	UH	10	0.24	ug/L	3
Hexachloroethane	67-72-1	8270D	5.2	UH	5.2	0.23	ug/L	3
Isophorone	78-59-1	8270D	5.2	UH	5.2	0.22	ug/L	3
2-Methylnaphthalene	91-57-6	8270D	1.0	UH	1.0	0.19	ug/L	3
2-Methylphenol	95-48-7	8270D	1.0	UH	1.0	0.31	ug/L	3
3 & 4-Methylphenol	106-44-5	8270D	2.1	UH	2.1	0.67	ug/L	3
2-Nitroaniline	88-74-4	8270D	2.1	UH	2.1	0.34	ug/L	3
3-Nitroaniline	99-09-2	8270D	10	UH	10	0.24	ug/L	3
4-Nitroaniline	100-01-6	8270D	2.1	UH	2.1	0.20	ug/L	3
Nitrobenzene	98-95-3	8270D	1.0	UH	1.0	0.26	ug/L	3
2-Nitrophenol	88-75-5	8270D	10	UH	10	0.41	ug/L	3

exclude

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

fw
3/6/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-014**
Matrix: **Aqueous**

14RE2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0459	MZ	11/13/2009 2355	21686
2	3520C	8270D	1	12/04/2009 1907	MZ	11/13/2009 2355	21686
3	3520C	8270D	1	12/14/2009 0500	KSH	12/08/2009 2140	23219

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
4-Nitrophenol	100-02-7	8270D	5.2	R UH	5.2	0.44	ug/L	3 HT
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	UH	5.2	0.21	ug/L	3
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	UH	5.2	0.25	ug/L	3
Pentachlorophenol	87-86-5	8270D	5.2	UH	5.2	0.59	ug/L	3
Phenol	108-95-2	8270D	1.0	UH	1.0	0.23	ug/L	3
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	UH	1.0	0.22	ug/L	3
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	UH	5.2	0.15	ug/L	3

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	40-110		53	40-110	H	54	40-110
2-Fluorobiphenyl		55	50-110	N	49	50-110	H	54	50-110
Terphenyl-d14	N	38	50-135	N	34	50-135	HN	33	50-135
2-Fluorophenol		48	20-110		47	20-110	H	51	20-110
Phenol-d5		54	10-115		52	10-115	H	48	10-115
2,4,6-Tribromophenol		77	40-125		61	40-125	H	69	40-125

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0519	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LWJ
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0519	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		75	40-110
2-Fluorobiphenyl		66	50-110
Terphenyl-d14		59	50-135
2-Fluorophenol		63	20-110
Phenol-d5		65	10-115
2,4,6-Tribromophenol		75	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0539	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1	
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1	
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1	
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1	
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1	
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1	
Di-n-butyl phthalate	**84-74-2**	**8270D**	**0.18**	**J**	**5.0**	**0.060**	**ug/L**	**1**	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1	
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	5.0 ~~0.26~~	U ~~J~~	**5.0**	**0.11**	**ug/L**	**1**	EBL
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1	
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1	
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1	
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1	
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1	
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1	
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1	
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1	
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1	
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1	
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0539	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		50	40-110
2-Fluorobiphenyl		53	50-110
Terphenyl-d14		56	50-135
2-Fluorophenol		41	20-110
Phenol-d5		49	10-115
2,4,6-Tribromophenol		78	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0559	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	U	5.2	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	**84-74-2**	**8270D**	**0.21**	**J**	**5.2**	**0.062**	**ug/L**	**1**
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	10 ~~0.22~~	U	**5.2**	**0.11**	**ug/L**	**1** EBL
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK10035-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0559	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		74	40-110
2-Fluorobiphenyl		67	50-110
Terphenyl-d14		61	50-135
2-Fluorophenol		61	20-110
Phenol-d5		64	10-115
2,4,6-Tribromophenol		87	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
3/6/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD106-0-0.5-09D	KK10035-001	Soil
1RE	IR86-SD106-0-0.5-09DRE	KK10035-001RE	Soil
2	IR86-SD105-0-0.5-09D	KK10035-002	Soil
2RE	IR86-SD105-0-0.5-09DRE	KK10035-002RE	Soil
3	IR86-SD108-0-0.5-09D	KK10035-003	Soil
3RE	IR86-SD108-0-0.5-09DRE	KK10035-003RE	Soil
4	IR86-SD109-0-0.5-09D	KK10035-004	Soil
4RE	IR86-SD109-0-0.5-09DRE	KK10035-004RE	Soil
5	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6	IR86-SD112-0-0.5-09D	KK10035-006	Soil
6RE	IR86-SD112-0-0.5-09DRE	KK10035-006RE	Soil
7	IR86-SD113-0-0.5-09D	KK10035-007	Soil
8	IR86-TB01-110909	KK10035-008	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
11/20/09	2-Butanone	0.045 RRF	J/R	All Soil Samples

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/20/09	2-Butanone	0.047 RRF	None	See ICAL
	2-Hexanone	21.0%	J/UJ	All Soil Samples

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
1RE	Bromofluorobenzene	83%	J/UJ
2	Bromofluorobenzene	82%	J/UJ
2RE	Bromofluorobenzene	80%	J/UJ
3	Bromofluorobenzene	83%	J/UJ
3RE	Bromofluorobenzene	78%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
5	Acetone	Ok/25%/54	J/UJ
	Bromodichloromethane	58%/59%/38	J/UJ
	Bromoform	44%/47%/33	J/UJ
	2-Butanone	49%/41%/56	None - See ICAL
	Dibromochloromethane	60%/56%/46	J/UJ
	1,2-Dibromoethane	72%/71%/41	J/UJ
	trans-1,3-Dichloropropene	53%/48%/49	J/UJ
	cis-1,3-Dichloropropene	37%/40%/34	J/UJ
	2-Hexanone	40%/44%/32	None - See CCAL
	Methyl Acetate	4.6%/14%/68	J/R
	4-Methyl-2-pentanone	53%/54%/37	J/UJ
	Styrene	46%/Ok/22	J/UJ
	Tetrachloroethene	66%/Ok/22	J/UJ
	1,2,4-Trichlorobenzene	24%/24%/42	J/UJ
	Many Other Cmpds	High RPD	None for RPD alone

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
1	IS4-1,4-Dichlorobenzene-d4	Low	J/UJ - Associated Cmpds

Sample ID	Internal Standard	Area Count	Qualifier
1RE	IS4-1,4-Dichlorobenzene-d4	Low	None - See Surrogates
2	IS4-1,4-Dichlorobenzene-d4	Low	None - See Surrogates
2RE	IS4-1,4-Dichlorobenzene-d4	Low	None - See Surrogates
3	IS4-1,4-Dichlorobenzene-d4	Low	None - See Surrogates
3RE	IS4-1,4-Dichlorobenzene-d4	Low	None - See Surrogates
4	IS4-1,4-Dichlorobenzene-d4	Low	J/UJ - Associated Cmpds
4RE	IS4-1,4-Dichlorobenzene-d4	Low	J/UJ - Associated Cmpds
6	IS4-1,4-Dichlorobenzene-d4	Low	J/UJ - Associated Cmpds
6RE	IS4-1,4-Dichlorobenzene-d4	Low	J/UJ - Associated Cmpds

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01-111009-SD	None - ND	-	-	-	-
IR86-FB01-110909	None - ND	-	-	-	-
IR86-TB01-110909	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported

Compound Quantitation - Several samples exhibited surrogate and/or internal standard deficiencies. Please see Form Is for samples results to use for reporting.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1926	RRH		22284
2	5035	8260B	1	11/20/2009 2229	RRH		22284

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	65	U	65	5.9	ug/kg	1
Benzene	71-43-2	8260B	16	U	16	3.6	ug/kg	1
Bromodichloromethane	75-27-4	8260B	16	U	16	3.6	ug/kg	1
Bromoform	75-25-2	8260B	33	U	33	2.3	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	33	U	33	5.9	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	33	R ~~U~~	33	7.8	ug/kg	1 ICB
Carbon disulfide	75-15-0	8260B	16	U	16	4.3	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	16	U	16	5.9	ug/kg	1
Chlorobenzene	108-90-7	8260B	16	U	16	4.9	ug/kg	1
Chloroethane	75-00-3	8260B	16	U	16	4.3	ug/kg	1
Chloroform	67-66-3	8260B	16	U	16	2.7	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	16	U	16	3.3	ug/kg	1
Cyclohexane	110-82-7	8260B	16	U	16	2.2	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	16	UJ ~~U~~	16	4.9	ug/kg	1 ISL
Dibromochloromethane	124-48-1	8260B	16	U	16	2.1	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	16	U	16	2.8	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	16	UJ ~~U~~	16	3.0	ug/kg	1 ISL
1,3-Dichlorobenzene	541-73-1	8260B	16	~~U~~	16	4.3	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	16	~~U~~	16	4.9	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	16	U	16	5.2	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	16	U	16	2.4	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	16	U	16	3.3	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	16	U	16	5.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	16	U	16	2.5	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	16	U	16	4.9	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	16	U	16	3.0	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	16	U	16	2.2	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	16	U	16	2.7	ug/kg	1
Ethylbenzene	100-41-4	8260B	16	U	16	3.6	ug/kg	1
2-Hexanone	591-78-6	8260B	33	UJ ~~U~~	33	4.3	ug/kg	1 CCH
Isopropylbenzene	98-82-8	8260B	16	UJ ~~U~~	16	2.6	ug/kg	1 ISL
Methyl acetate	79-20-9	8260B	16	U	16	2.2	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	16	U	16	1.3	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	33	U	33	4.9	ug/kg	1
Methylcyclohexane	108-87-2	8260B	16	U	16	2.0	ug/kg	1
Methylene chloride	75-09-2	8260B	16	U	16	8.5	ug/kg	1
Styrene	100-42-5	8260B	16	U	16	3.6	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	16	UJ ~~U~~	16	1.5	ug/kg	1 ISL
Tetrachloroethene	127-18-4	8260B	16	U	16	7.5	ug/kg	1
Toluene	108-88-3	8260B	16	U	16	4.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	16	U	16	6.9	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	16	UJ ~~U~~	16	3.3	ug/kg	1 ISL
1,1,1-Trichloroethane	71-55-6	8260B	16	U	16	2.8	ug/kg	1

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1926	RRH		22284
2	5035	8260B	1	11/20/2009 2229	RRH		22284

Use reanalysis

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	16	U	16	2.6	ug/kg	1
Trichloroethene	79-01-6	8260B	16	U	16	6.2	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	16	U	16	4.9	ug/kg	1
Vinyl chloride	75-01-4	8260B	16	U	16	2.8	ug/kg	1
Xylenes (total)	1330-20-7	8260B	16	U	16	9.5	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		87	85-120	N	83	85-120
1,2-Dichloroethane-d4		94	53-142		89	53-142
Toluene-d8		102	85-115		101	85-115

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ewl
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

1AE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1926	RRH		22284
2	5035	8260B	1	11/20/2009 2229	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	65 UJ	U	65	5.9	ug/kg	2 SSL
Benzene	71-43-2	8260B	16	U	16	3.6	ug/kg	2
Bromodichloromethane	75-27-4	8260B	16	U	16	3.6	ug/kg	2
Bromoform	75-25-2	8260B	33	U	33	2.3	ug/kg	2
Bromomethane (Methyl bromide)	74-83-9	8260B	33	U	33	5.9	ug/kg	2
2-Butanone (MEK)	78-93-3	8260B	33 R	U	33	7.8	ug/kg	2 ICB
Carbon disulfide	75-15-0	8260B	16 UJ	U	16	4.3	ug/kg	2 SSL
Carbon tetrachloride	56-23-5	8260B	16	U	16	5.9	ug/kg	2
Chlorobenzene	108-90-7	8260B	16	U	16	4.9	ug/kg	2
Chloroethane	75-00-3	8260B	16	U	16	4.3	ug/kg	2
Chloroform	67-66-3	8260B	16	U	16	2.7	ug/kg	2
Chloromethane (Methyl chloride)	74-87-3	8260B	16	U	16	3.3	ug/kg	2
Cyclohexane	110-82-7	8260B	16	U	16	2.2	ug/kg	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	16 UJ	U	16	4.9	ug/kg	2 SSL
Dibromochloromethane	124-48-1	8260B	16	U	16	2.1	ug/kg	2 SSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	16	U	16	2.8	ug/kg	2 SSL
1,2-Dichlorobenzene	**95-50-1**	**8260B**	**5.9** J		**16**	**3.0**	**ug/kg**	**2** SSL
1,3-Dichlorobenzene	541-73-1	8260B	16 UJ	U	16	4.3	ug/kg	2
1,4-Dichlorobenzene	106-46-7	8260B	16 UJ	U	16	4.9	ug/kg	2
Dichlorodifluoromethane	75-71-8	8260B	16 UJ	U	16	5.2	ug/kg	2 SSL
1,1-Dichloroethane	75-34-3	8260B	16	U	16	2.4	ug/kg	2
1,2-Dichloroethane	107-06-2	8260B	16	U	16	3.3	ug/kg	2
1,1-Dichloroethene	75-35-4	8260B	16	U	16	5.6	ug/kg	2
cis-1,2-Dichloroethene	156-59-2	8260B	16	U	16	2.5	ug/kg	2
trans-1,2-Dichloroethene	156-60-5	8260B	16	U	16	4.9	ug/kg	2
1,2-Dichloropropane	78-87-5	8260B	16	U	16	3.0	ug/kg	2
cis-1,3-Dichloropropene	10061-01-5	8260B	16	U	16	2.2	ug/kg	2
trans-1,3-Dichloropropene	10061-02-6	8260B	16	U	16	2.7	ug/kg	2
Ethylbenzene	100-41-4	8260B	16	U	16	3.6	ug/kg	2
2-Hexanone	591-78-6	8260B	33 UJ	U	33	4.3	ug/kg	2 CCH
Isopropylbenzene	98-82-8	8260B	16 UJ	U	16	2.6	ug/kg	2 SSL
Methyl acetate	79-20-9	8260B	16	U	16	2.2	ug/kg	2 SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	16	U	16	1.3	ug/kg	2
4-Methyl-2-pentanone	108-10-1	8260B	33	U	33	4.9	ug/kg	2
Methylcyclohexane	108-87-2	8260B	16	U	16	2.0	ug/kg	2
Methylene chloride	75-09-2	8260B	16	U	16	8.5	ug/kg	2
Styrene	100-42-5	8260B	16	U	16	3.6	ug/kg	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	16 UJ	U	16	1.5	ug/kg	2 SSL
Tetrachloroethene	127-18-4	8260B	16	U	16	7.5	ug/kg	2 SSL
Toluene	108-88-3	8260B	16	U	16	4.6	ug/kg	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	16	U	16	6.9	ug/kg	2
1,2,4-Trichlorobenzene	120-82-1	8260B	16 UJ	U	16	3.3	ug/kg	2 SSL
1,1,1-Trichloroethane	71-55-6	8260B	16 UJ	U	16	2.8	ug/kg	2 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

IRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1926	RRH		22284
2	5035	8260B	1	11/20/2009 2229	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	16	UJ ~~U~~	16	2.6	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	16	~~U~~	16	6.2	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	16	~~U~~	16	4.9	ug/kg	2
Vinyl chloride	75-01-4	8260B	16	~~U~~	16	2.8	ug/kg	2
Xylenes (total)	1330-20-7	8260B	16	~~U~~	16	9.5	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		87	85-120	N	83	85-120
1,2-Dichloroethane-d4		94	53-142		89	53-142
Toluene-d8		102	85-115		101	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1949	RRH		22284
2	5035	8260B	1	11/20/2009 2252	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	59 UJ	U	59	5.3	ug/kg	1	SSL
Benzene	71-43-2	8260B	15	U	15	3.2	ug/kg	1	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.2	ug/kg	1	
Bromoform	75-25-2	8260B	29	U	29	2.0	ug/kg	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	29	U	29	5.3	ug/kg	1	
2-Butanone (MEK)	78-93-3	8260B	29 R	U	29	7.0	ug/kg	1	IcB
Carbon disulfide	75-15-0	8260B	15 UJ	U	15	3.8	ug/kg	1	SSL
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.3	ug/kg	1	
Chlorobenzene	108-90-7	8260B	15	U	15	4.4	ug/kg	1	
Chloroethane	75-00-3	8260B	15	U	15	3.8	ug/kg	1	
Chloroform	67-66-3	8260B	15	U	15	2.4	ug/kg	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	2.9	ug/kg	1	
Cyclohexane	110-82-7	8260B	15	U	15	2.0	ug/kg	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15 UJ	U	15	4.4	ug/kg	1	SSL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.8	ug/kg	1	SSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.5	ug/kg	1	
1,2-Dichlorobenzene	95-50-1	8260B	15 UJ	U	15	2.7	ug/kg	1	SSL
1,3-Dichlorobenzene	541-73-1	8260B	15	U	15	3.8	ug/kg	1	
1,4-Dichlorobenzene	106-46-7	8260B	15	U	15	4.4	ug/kg	1	
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.7	ug/kg	1	SSL
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.1	ug/kg	1	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	2.9	ug/kg	1	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.0	ug/kg	1	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.2	ug/kg	1	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.4	ug/kg	1	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.7	ug/kg	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.0	ug/kg	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.4	ug/kg	1	
Ethylbenzene	100-41-4	8260B	15	U	15	3.2	ug/kg	1	
2-Hexanone	591-78-6	8260B	29 UJ	U	29	3.8	ug/kg	1	CCH
Isopropylbenzene	98-82-8	8260B	15 UJ	U	15	2.3	ug/kg	1	SSL
Methyl acetate	79-20-9	8260B	15	U	15	2.0	ug/kg	1	SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	1	
4-Methyl-2-pentanone	108-10-1	8260B	29	U	29	4.4	ug/kg	1	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.8	ug/kg	1	
Methylene chloride	75-09-2	8260B	15	U	15	7.6	ug/kg	1	
Styrene	100-42-5	8260B	15	U	15	3.2	ug/kg	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15 UJ	U	15	1.4	ug/kg	1	SSL
Tetrachloroethene	127-18-4	8260B	15	U	15	6.7	ug/kg	1	SSL
Toluene	108-88-3	8260B	15	U	15	4.1	ug/kg	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.1	ug/kg	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	15 UJ	U	15	2.9	ug/kg	1	SSL
1,1,1-Trichloroethane	71-55-6	8260B	15 UJ	U	15	2.5	ug/kg	1	SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002** 2
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1949	RRH		22284
2	5035	8260B	1	11/20/2009 2252	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15 UJ	~~U~~	15	2.3	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	15	~~U~~	15	5.6	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	15	~~U~~	15	4.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	15	~~U~~	15	2.5	ug/kg	1
Xylenes (total)	1330-20-7	8260B	15	U	15	8.5	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	82	85-120	N	80	85-120
1,2-Dichloroethane-d4		94	53-142		102	53-142
Toluene-d8		99	85-115		104	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002** 2RE
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1949	RRH		22284
2	5035	8260B	1	11/20/2009 2252	RRH		22284

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	59 UJ	U	59	5.3	ug/kg	2	SSL
Benzene	71-43-2	8260B	15	U	15	3.2	ug/kg	2	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.2	ug/kg	2	
Bromoform	75-25-2	8260B	29	U	29	2.0	ug/kg	2	
Bromomethane (Methyl bromide)	74-83-9	8260B	29	U	29	5.3	ug/kg	2	
2-Butanone (MEK)	78-93-3	8260B	29 R	U	29	7.0	ug/kg	2	ICB
Carbon disulfide	75-15-0	8260B	15 UJ	U	15	3.8	ug/kg	2	SSL
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.3	ug/kg	2	
Chlorobenzene	108-90-7	8260B	15	U	15	4.4	ug/kg	2	
Chloroethane	75-00-3	8260B	15	U	15	3.8	ug/kg	2	
Chloroform	67-66-3	8260B	15	U	15	2.4	ug/kg	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	2.9	ug/kg	2	
Cyclohexane	110-82-7	8260B	15	U	15	2.0	ug/kg	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15 UJ	U	15	4.4	ug/kg	2	SSL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.8	ug/kg	2	SSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.5	ug/kg	2	
1,2-Dichlorobenzene	95-50-1	8260B	15 UJ	U	15	2.7	ug/kg	2	SSL
1,3-Dichlorobenzene	541-73-1	8260B	15	U	15	3.8	ug/kg	2	
1,4-Dichlorobenzene	106-46-7	8260B	15	U	15	4.4	ug/kg	2	
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.7	ug/kg	2	SSL
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.1	ug/kg	2	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	2.9	ug/kg	2	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.0	ug/kg	2	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.2	ug/kg	2	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.4	ug/kg	2	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.7	ug/kg	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.0	ug/kg	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.4	ug/kg	2	
Ethylbenzene	100-41-4	8260B	15	U	15	3.2	ug/kg	2	
2-Hexanone	591-78-6	8260B	29 UJ	U	29	3.8	ug/kg	2	CCH
Isopropylbenzene	98-82-8	8260B	15 UJ	U	15	2.3	ug/kg	2	SSL
Methyl acetate	79-20-9	8260B	15	U	15	2.0	ug/kg	2	SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	2	
4-Methyl-2-pentanone	108-10-1	8260B	29	U	29	4.4	ug/kg	2	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.8	ug/kg	2	
Methylene chloride	75-09-2	8260B	15	U	15	7.6	ug/kg	2	
Styrene	100-42-5	8260B	15	U	15	3.2	ug/kg	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15 UJ	U	15	1.4	ug/kg	2	SSL
Tetrachloroethene	127-18-4	8260B	15	U	15	6.7	ug/kg	2	SSL
Toluene	108-88-3	8260B	15	U	15	4.1	ug/kg	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.1	ug/kg	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	15 UJ	U	15	2.9	ug/kg	2	SSL
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.5	ug/kg	2	SSL

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002** 2RE
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 1949	RRH		22284
2	5035	8260B	1	11/20/2009 2252	RRH		22284

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15 UJ	U	15	2.3	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	15	U	15	5.6	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.4	ug/kg	2
Vinyl chloride	75-01-4	8260B	15	U	15	2.5	ug/kg	2
Xylenes (total)	1330-20-7	8260B	15	U	15	8.5	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	82	85-120	N	80	85-120
1,2-Dichloroethane-d4		94	53-142		102	53-142
Toluene-d8		99	85-115		104	85-115

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW 3/6/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003** 3
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2013	RRH		22284
2	5035	8260B	1	11/20/2009 2315	RRH		22284

use reanalysis results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**9.2** J	J	**32**	**2.9**	**ug/kg**	**1** SSL
Benzene	71-43-2	8260B	8.1 UJ	U	8.1	1.8	ug/kg	1
Bromodichloromethane	75-27-4	8260B	8.1	U	8.1	1.8	ug/kg	1
Bromoform	75-25-2	8260B	16	U	16	1.1	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	16	U	16	2.9	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	16 R	U	16	3.9	ug/kg	1 ICB
Carbon disulfide	75-15-0	8260B	8.1 UJ	U	8.1	2.1	ug/kg	1 SSL
Carbon tetrachloride	56-23-5	8260B	8.1	U	8.1	2.9	ug/kg	1
Chlorobenzene	108-90-7	8260B	8.1	U	8.1	2.4	ug/kg	1
Chloroethane	75-00-3	8260B	8.1	U	8.1	2.1	ug/kg	1
Chloroform	67-66-3	8260B	8.1	U	8.1	1.3	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	8.1	U	8.1	1.6	ug/kg	1
Cyclohexane	110-82-7	8260B	8.1	U	8.1	1.1	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	8.1 UJ	U	8.1	2.4	ug/kg	1 SSL
Dibromochloromethane	124-48-1	8260B	8.1	U	8.1	1.0	ug/kg	1 SSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	8.1	U	8.1	1.4	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	8.1 UJ	U	8.1	1.5	ug/kg	1 SSL
1,3-Dichlorobenzene	541-73-1	8260B	8.1	U	8.1	2.1	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	8.1	U	8.1	2.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	8.1	U	8.1	2.6	ug/kg	1 SSL
1,1-Dichloroethane	75-34-3	8260B	8.1	U	8.1	1.2	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	8.1	U	8.1	1.6	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	8.1	U	8.1	2.8	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	8.1	U	8.1	1.2	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	8.1	U	8.1	2.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	8.1	U	8.1	1.5	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	8.1	U	8.1	1.1	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	8.1	U	8.1	1.3	ug/kg	1
Ethylbenzene	100-41-4	8260B	8.1	U	8.1	1.8	ug/kg	1
2-Hexanone	591-78-6	8260B	16 UJ	U	16	2.1	ug/kg	1 CCV
Isopropylbenzene	98-82-8	8260B	8.1 UJ	U	8.1	1.3	ug/kg	1 SSL
Methyl acetate	79-20-9	8260B	8.1	U	8.1	1.1	ug/kg	1 SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	8.1	U	8.1	0.65	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	16	U	16	2.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	8.1	U	8.1	0.99	ug/kg	1
Methylene chloride	75-09-2	8260B	8.1	U	8.1	4.2	ug/kg	1
Styrene	100-42-5	8260B	8.1	U	8.1	1.8	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	8.1 UJ	U	8.1	0.76	ug/kg	1 SSL
Tetrachloroethene	127-18-4	8260B	8.1	U	8.1	3.7	ug/kg	1 SSL
Toluene	108-88-3	8260B	8.1	U	8.1	2.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	8.1	U	8.1	3.4	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	8.1 UJ	U	8.1	1.6	ug/kg	1 SSL
1,1,1-Trichloroethane	71-55-6	8260B	8.1	U	8.1	1.4	ug/kg	1 SSL

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/6/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003** 3
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2013	RRH		22284
2	5035	8260B	1	11/20/2009 2315	RRH		22284

use reanalysis results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	8.1 UJ	U	8.1	1.3	ug/kg	1 SSL
Trichloroethene	79-01-6	8260B	8.1	U	8.1	3.1	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	8.1	U	8.1	2.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	8.1	U	8.1	1.4	ug/kg	1
Xylenes (total)	1330-20-7	8260B	8.1	U	8.1	4.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	83	85-120	N	78	85-120
1,2-Dichloroethane-d4		100	53-142		92	53-142
Toluene-d8		97	85-115		96	85-115

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2013	RRH		22284
2	5035	8260B	1	11/20/2009 2315	RRH		22284

Parameter	CAS Number	Analytical Method	Result		Q	PQL	MDL	Units	Run	
Acetone	**67-64-1**	**8260B**	**25**	J	J	**32**	**2.9**	**ug/kg**	**2**	SSL
Benzene	71-43-2	8260B	8.1	UJ	U	8.1	1.8	ug/kg	2	
Bromodichloromethane	75-27-4	8260B	8.1		U	8.1	1.8	ug/kg	2	
Bromoform	75-25-2	8260B	16		U	16	1.1	ug/kg	2	
Bromomethane (Methyl bromide)	74-83-9	8260B	16		U	16	2.9	ug/kg	2	
2-Butanone (MEK)	78-93-3	8260B	16	R	U	16	3.9	ug/kg	2	ICB
Carbon disulfide	75-15-0	8260B	8.1	UJ	U	8.1	2.1	ug/kg	2	SSL
Carbon tetrachloride	56-23-5	8260B	8.1		U	8.1	2.9	ug/kg	2	
Chlorobenzene	108-90-7	8260B	8.1		U	8.1	2.4	ug/kg	2	
Chloroethane	75-00-3	8260B	8.1		U	8.1	2.1	ug/kg	2	
Chloroform	67-66-3	8260B	8.1		U	8.1	1.3	ug/kg	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	8.1		U	8.1	1.6	ug/kg	2	
Cyclohexane	110-82-7	8260B	8.1		U	8.1	1.1	ug/kg	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	8.1	UJ	U	8.1	2.4	ug/kg	2	SSL
Dibromochloromethane	124-48-1	8260B	8.1		U	8.1	1.0	ug/kg	2	SSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	8.1		U	8.1	1.4	ug/kg	2	
1,2-Dichlorobenzene	**95-50-1**	**8260B**	**2.8**	J	J	**8.1**	**1.5**	**ug/kg**	**2**	SSL
1,3-Dichlorobenzene	**541-73-1**	**8260B**	**2.7**		J	**8.1**	**2.1**	**ug/kg**	**2**	
1,4-Dichlorobenzene	**106-46-7**	**8260B**	**2.6**		J	**8.1**	**2.4**	**ug/kg**	**2**	
Dichlorodifluoromethane	75-71-8	8260B	8.1	UJ	U	8.1	2.6	ug/kg	2	SSL
1,1-Dichloroethane	75-34-3	8260B	8.1		U	8.1	1.2	ug/kg	2	
1,2-Dichloroethane	107-06-2	8260B	8.1		U	8.1	1.6	ug/kg	2	
1,1-Dichloroethene	75-35-4	8260B	8.1		U	8.1	2.8	ug/kg	2	
cis-1,2-Dichloroethene	156-59-2	8260B	8.1		U	8.1	1.2	ug/kg	2	
trans-1,2-Dichloroethene	156-60-5	8260B	8.1		U	8.1	2.4	ug/kg	2	
1,2-Dichloropropane	78-87-5	8260B	8.1		U	8.1	1.5	ug/kg	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	8.1		U	8.1	1.1	ug/kg	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	8.1		U	8.1	1.3	ug/kg	2	
Ethylbenzene	100-41-4	8260B	8.1		U	8.1	1.8	ug/kg	2	
2-Hexanone	591-78-6	8260B	16	UJ	U	16	2.1	ug/kg	2	CCM
Isopropylbenzene	98-82-8	8260B	8.1	UJ	U	8.1	1.3	ug/kg	2	SSL
Methyl acetate	79-20-9	8260B	8.1		U	8.1	1.1	ug/kg	2	SSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	8.1		U	8.1	0.65	ug/kg	2	
4-Methyl-2-pentanone	108-10-1	8260B	16		U	16	2.4	ug/kg	2	
Methylcyclohexane	108-87-2	8260B	8.1		U	8.1	0.99	ug/kg	2	
Methylene chloride	75-09-2	8260B	8.1		U	8.1	4.2	ug/kg	2	
Styrene	100-42-5	8260B	8.1		U	8.1	1.8	ug/kg	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	8.1	UJ	U	8.1	0.76	ug/kg	2	SSL
Tetrachloroethene	127-18-4	8260B	8.1		U	8.1	3.7	ug/kg	2	SSL
Toluene	108-88-3	8260B	8.1		U	8.1	2.3	ug/kg	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	8.1		U	8.1	3.4	ug/kg	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	8.1	UJ	U	8.1	1.6	ug/kg	2	SSL
1,1,1-Trichloroethane	71-55-6	8260B	8.1		U	8.1	1.4	ug/kg	2	SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003** 3RE
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2013	RRH		22284
2	5035	8260B	1	11/20/2009 2315	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	8.1 UJ	~~U~~	8.1	1.3	ug/kg	2 SSL
Trichloroethene	79-01-6	8260B	8.1	~~U~~	8.1	3.1	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	8.1	~~U~~	8.1	2.4	ug/kg	2
Vinyl chloride	75-01-4	8260B	8.1	~~U~~	8.1	1.4	ug/kg	2
Xylenes (total)	1330-20-7	8260B	8.1	~~U~~	8.1	4.7	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene	N	83	85-120	N	78	85-120
1,2-Dichloroethane-d4		100	53-142		92	53-142
Toluene-d8		97	85-115		96	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

kW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2036	RRH		22284
2	5035	8260B	1	11/20/2009 2337	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	60	U	60	5.4	ug/kg	1	
Benzene	71-43-2	8260B	15	U	15	3.3	ug/kg	1	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.3	ug/kg	1	
Bromoform	75-25-2	8260B	30	U	30	2.1	ug/kg	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	30	U	30	5.4	ug/kg	1	
2-Butanone (MEK)	78-93-3	8260B	30	R ~~U~~	30	7.3	ug/kg	1	ICB
Carbon disulfide	75-15-0	8260B	15	U	15	3.9	ug/kg	1	
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.4	ug/kg	1	
Chlorobenzene	108-90-7	8260B	15	U	15	4.5	ug/kg	1	
Chloroethane	75-00-3	8260B	15	U	15	3.9	ug/kg	1	
Chloroform	67-66-3	8260B	15	U	15	2.5	ug/kg	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	3.0	ug/kg	1	
Cyclohexane	110-82-7	8260B	15	U	15	2.0	ug/kg	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15	UJ ~~U~~	15	4.5	ug/kg	1	ISL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.9	ug/kg	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.6	ug/kg	1	
1,2-Dichlorobenzene	95-50-1	8260B	15	UJ U	15	2.8	ug/kg	1	ISL
1,3-Dichlorobenzene	541-73-1	8260B	15	U	15	3.9	ug/kg	1	↓
1,4-Dichlorobenzene	106-46-7	8260B	15	U	15	4.5	ug/kg	1	↓
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.8	ug/kg	1	
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.2	ug/kg	1	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	3.0	ug/kg	1	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.1	ug/kg	1	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.3	ug/kg	1	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.5	ug/kg	1	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.8	ug/kg	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.1	ug/kg	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.5	ug/kg	1	
Ethylbenzene	100-41-4	8260B	15	U	15	3.3	ug/kg	1	
2-Hexanone	591-78-6	8260B	30	UJ ~~U~~	30	3.9	ug/kg	1	CCH
Isopropylbenzene	98-82-8	8260B	15	UJ ~~U~~	15	2.4	ug/kg	1	ISL
Methyl acetate	79-20-9	8260B	15	U	15	2.0	ug/kg	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	1	
4-Methyl-2-pentanone	108-10-1	8260B	30	U	30	4.5	ug/kg	1	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.8	ug/kg	1	
Methylene chloride	75-09-2	8260B	15	U	15	7.9	ug/kg	1	
Styrene	100-42-5	8260B	15	U	15	3.3	ug/kg	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15	UJ ~~U~~	15	1.4	ug/kg		ISL
Tetrachloroethene	127-18-4	8260B	15	U	15	7.0	ug/kg	1	
Toluene	108-88-3	8260B	15	U	15	4.2	ug/kg	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.3	ug/kg	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	15	UJ ~~U~~	15	3.0	ug/kg	1	ISL
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.6	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2036	RRH		22284
2	5035	8260B	1	11/20/2009 2337	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15	U	15	2.4	ug/kg	1
Trichloroethene	79-01-6	8260B	15	U	15	5.7	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.5	ug/kg	1
Vinyl chloride	75-01-4	8260B	15	U	15	2.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	15	U	15	8.8	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		93	85-120		90	85-120
1,2-Dichloroethane-d4		101	53-142		96	53-142
Toluene-d8		109	85-115		104	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2036	RRH		22284
2	5035	8260B	1	11/20/2009 2337	RRH		22284

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	60	U	60	5.4	ug/kg	2	
Benzene	71-43-2	8260B	15	U	15	3.3	ug/kg	2	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.3	ug/kg	2	
Bromoform	75-25-2	8260B	30	U	30	2.1	ug/kg	2	
Bromomethane (Methyl bromide)	74-83-9	8260B	30	U	30	5.4	ug/kg	2	
2-Butanone (MEK)	78-93-3	8260B	30 R	~~U~~	30	7.3	ug/kg	2	ICB
Carbon disulfide	75-15-0	8260B	15	U	15	3.9	ug/kg	2	
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.4	ug/kg	2	
Chlorobenzene	108-90-7	8260B	15	U	15	4.5	ug/kg	2	
Chloroethane	75-00-3	8260B	15	U	15	3.9	ug/kg	2	
Chloroform	67-66-3	8260B	15	U	15	2.5	ug/kg	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	3.0	ug/kg	2	
Cyclohexane	110-82-7	8260B	15	U	15	2.0	ug/kg	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15 UJ	~~U~~	15	4.5	ug/kg	2	ISL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.9	ug/kg	2	
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.6	ug/kg	2	
1,2-Dichlorobenzene	95-50-1	8260B	15 UJ	~~U~~	15	2.8	ug/kg	2	ISL
1,3-Dichlorobenzene	541-73-1	8260B	15	U	15	3.9	ug/kg	2	↓
1,4-Dichlorobenzene	106-46-7	8260B	15	U	15	4.5	ug/kg	2	↓
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.8	ug/kg	2	
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.2	ug/kg	2	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	3.0	ug/kg	2	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.1	ug/kg	2	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.3	ug/kg	2	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.5	ug/kg	2	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.8	ug/kg	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.1	ug/kg	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.5	ug/kg	2	
Ethylbenzene	100-41-4	8260B	15	U	15	3.3	ug/kg	2	
2-Hexanone	591-78-6	8260B	30 UJ	~~U~~	30	3.9	ug/kg	2	CCH
Isopropylbenzene	98-82-8	8260B	15 UJ	~~U~~	15	2.4	ug/kg	2	ISL
Methyl acetate	79-20-9	8260B	15	U	15	2.0	ug/kg	2	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	2	
4-Methyl-2-pentanone	108-10-1	8260B	30	U	30	4.5	ug/kg	2	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.8	ug/kg	2	
Methylene chloride	75-09-2	8260B	15	U	15	7.9	ug/kg	2	
Styrene	100-42-5	8260B	15	U	15	3.3	ug/kg	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15 UJ	~~U~~	15	1.4	ug/kg	2	ISL
Tetrachloroethene	127-18-4	8260B	15	U	15	7.0	ug/kg	2	
Toluene	108-88-3	8260B	15	U	15	4.2	ug/kg	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.3	ug/kg	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	15 UJ	~~U~~	15	3.0	ug/kg	2	ISL
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.6	ug/kg	2	

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW 3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2036	RRH		22284
2	5035	8260B	1	11/20/2009 2337	RRH		22284

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15	U	15	2.4	ug/kg	2
Trichloroethene	79-01-6	8260B	15	U	15	5.7	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.5	ug/kg	2
Vinyl chloride	75-01-4	8260B	15	U	15	2.6	ug/kg	2
Xylenes (total)	1330-20-7	8260B	15	U	15	8.8	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		93	85-120		90	85-120
1,2-Dichloroethane-d4		101	53-142		96	53-142
Toluene-d8		109	85-115		104	85-115

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW 3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2058	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	**67-64-1**	**8260B**	**50**	J	**44**	**3.9**	**ug/kg**	**1**	MSL
Benzene	71-43-2	8260B	11	U	11	2.4	ug/kg	1	
Bromodichloromethane	75-27-4	8260B	11	UJ ~~J~~	11	2.4	ug/kg	1	MSL
Bromoform	75-25-2	8260B	22	UJ ~~J~~	22	1.5	ug/kg	1	MSL
Bromomethane (Methyl bromide)	74-83-9	8260B	22	U	22	3.9	ug/kg	1	
2-Butanone (MEK)	78-93-3	8260B	22	R ~~J~~	22	5.2	ug/kg	1	JCB
Carbon disulfide	75-15-0	8260B	11	U	11	2.8	ug/kg	1	
Carbon tetrachloride	56-23-5	8260B	11	U	11	3.9	ug/kg	1	
Chlorobenzene	108-90-7	8260B	11	U	11	3.3	ug/kg	1	
Chloroethane	75-00-3	8260B	11	U	11	2.8	ug/kg	1	
Chloroform	67-66-3	8260B	11	U	11	1.8	ug/kg	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	11	U	11	2.2	ug/kg	1	
Cyclohexane	110-82-7	8260B	11	U	11	1.5	ug/kg	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	11	U	11	3.3	ug/kg	1	
Dibromochloromethane	124-48-1	8260B	11	UJ ~~J~~	11	1.4	ug/kg	1	MSL
1,2-Dibromoethane (EDB)	106-93-4	8260B	11	UJ ~~J~~	11	1.9	ug/kg	1	MSL
1,2-Dichlorobenzene	95-50-1	8260B	11	U	11	2.0	ug/kg	1	
1,3-Dichlorobenzene	541-73-1	8260B	11	U	11	2.8	ug/kg	1	
1,4-Dichlorobenzene	106-46-7	8260B	11	U	11	3.3	ug/kg	1	
Dichlorodifluoromethane	75-71-8	8260B	11	U	11	3.5	ug/kg	1	
1,1-Dichloroethane	75-34-3	8260B	11	U	11	1.6	ug/kg	1	
1,2-Dichloroethane	107-06-2	8260B	11	U	11	2.2	ug/kg	1	
1,1-Dichloroethene	75-35-4	8260B	11	U	11	3.7	ug/kg	1	
cis-1,2-Dichloroethene	156-59-2	8260B	11	U	11	1.7	ug/kg	1	
trans-1,2-Dichloroethene	156-60-5	8260B	11	U	11	3.3	ug/kg	1	
1,2-Dichloropropane	78-87-5	8260B	11	U	11	2.0	ug/kg	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	11	UJ ~~J~~	11	1.5	ug/kg	1	MSL
trans-1,3-Dichloropropene	10061-02-6	8260B	11	UJ ~~J~~	11	1.8	ug/kg	1	MSL
Ethylbenzene	100-41-4	8260B	11	U	11	2.4	ug/kg	1	
2-Hexanone	591-78-6	8260B	22	UJ ~~J~~	22	2.8	ug/kg	1	CCH
Isopropylbenzene	98-82-8	8260B	11	U	11	1.7	ug/kg	1	
Methyl acetate	79-20-9	8260B	11	R ~~J~~	11	1.5	ug/kg	1	MSL
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	11	U	11	0.87	ug/kg	1	
4-Methyl-2-pentanone	108-10-1	8260B	22	UJ ~~J~~	22	3.3	ug/kg	1	MSL
Methylcyclohexane	108-87-2	8260B	11	U	11	1.3	ug/kg	1	
Methylene chloride	75-09-2	8260B	11	U	11	5.7	ug/kg	1	
Styrene	100-42-5	8260B	11	UJ ~~J~~	11	2.4	ug/kg	1	MSL
1,1,2,2-Tetrachloroethane	79-34-5	8260B	11	U	11	1.0	ug/kg	1	
Tetrachloroethene	127-18-4	8260B	11	UJ ~~J~~	11	5.0	ug/kg	1	MSL
Toluene	108-88-3	8260B	11	U	11	3.1	ug/kg	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	11	U	11	4.6	ug/kg	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	11	UJ ~~J~~	11	2.2	ug/kg	1	MSL
1,1,1-Trichloroethane	71-55-6	8260B	11	U	11	1.9	ug/kg	1	
1,1,2-Trichloroethane	79-00-5	8260B	11	U	11	1.7	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2058	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	11	U	11	4.2	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	11	U	11	3.3	ug/kg	1
Vinyl chloride	75-01-4	8260B	11	U	11	1.9	ug/kg	1
Xylenes (total)	1330-20-7	8260B	11	U	11	6.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		108	85-120
1,2-Dichloroethane-d4		102	53-142
Toluene-d8		110	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2121	RRH		22284
2	5035	8260B	1	11/21/2009 0000	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	61	U	61	5.5	ug/kg	1	
Benzene	71-43-2	8260B	15	U	15	3.4	ug/kg	1	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.4	ug/kg	1	
Bromoform	75-25-2	8260B	31	U	31	2.1	ug/kg	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	31	U	31	5.5	ug/kg	1	
2-Butanone (MEK)	78-93-3	8260B	31	R ~~U~~	31	7.3	ug/kg	1	JCB
Carbon disulfide	75-15-0	8260B	15	U	15	4.0	ug/kg	1	
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.5	ug/kg	1	
Chlorobenzene	108-90-7	8260B	15	U	15	4.6	ug/kg	1	
Chloroethane	75-00-3	8260B	15	U	15	4.0	ug/kg	1	
Chloroform	67-66-3	8260B	15	U	15	2.5	ug/kg	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	3.1	ug/kg	1	
Cyclohexane	110-82-7	8260B	15	U	15	2.1	ug/kg	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15	UJ ~~U~~	15	4.6	ug/kg	1	FSL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.9	ug/kg	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.6	ug/kg	1	
1,2-Dichlorobenzene	95-50-1	8260B	15	UJ ~~U~~	15	2.8	ug/kg	1	FSL
1,3-Dichlorobenzene	541-73-1	8260B	15	~~U~~	15	4.0	ug/kg	1	↓
1,4-Dichlorobenzene	106-46-7	8260B	15	~~U~~	15	4.6	ug/kg	1	↓
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.9	ug/kg	1	
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.2	ug/kg	1	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	3.1	ug/kg	1	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.2	ug/kg	1	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.3	ug/kg	1	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.6	ug/kg	1	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.8	ug/kg	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.1	ug/kg	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.5	ug/kg	1	
Ethylbenzene	100-41-4	8260B	15	U	15	3.4	ug/kg	1	
2-Hexanone	591-78-6	8260B	31	UJ ~~U~~	31	4.0	ug/kg	1	CCH
Isopropylbenzene	98-82-8	8260B	15	UJ ~~U~~	15	2.4	ug/kg	1	FSL
Methyl acetate	79-20-9	8260B	15	U	15	2.1	ug/kg	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	1	
4-Methyl-2-pentanone	108-10-1	8260B	31	U	31	4.6	ug/kg	1	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.9	ug/kg	1	
Methylene chloride	75-09-2	8260B	15	U	15	8.0	ug/kg	1	
Styrene	100-42-5	8260B	15	U	15	3.4	ug/kg	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15	UJ ~~U~~	15	1.4	ug/kg	1	FSL
Tetrachloroethene	127-18-4	8260B	15	U	15	7.0	ug/kg	1	
Toluene	108-88-3	8260B	15	U	15	4.3	ug/kg	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.4	ug/kg	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	15	UJ ~~U~~	15	3.1	ug/kg	1	FSL
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.6	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2121	RRH		22284
2	5035	8260B	1	11/21/2009 0000	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15	U	15	2.4	ug/kg	1
Trichloroethene	79-01-6	8260B	15	U	15	5.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.6	ug/kg	1
Vinyl chloride	75-01-4	8260B	15	U	15	2.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	15	U	15	8.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		90	85-120		87	85-120
1,2-Dichloroethane-d4		89	53-142		86	53-142
Toluene-d8		102	85-115		98	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2121	RRH		22284
2	5035	8260B	1	11/21/2009 0000	RRH		22284

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	61	U	61	5.5	ug/kg	2	
Benzene	71-43-2	8260B	15	U	15	3.4	ug/kg	2	
Bromodichloromethane	75-27-4	8260B	15	U	15	3.4	ug/kg	2	
Bromoform	75-25-2	8260B	31	U	31	2.1	ug/kg	2	
Bromomethane (Methyl bromide)	74-83-9	8260B	31	U	31	5.5	ug/kg	2	
2-Butanone (MEK)	78-93-3	8260B	31	R ~~U~~	31	7.3	ug/kg	2	ICB
Carbon disulfide	75-15-0	8260B	15	U	15	4.0	ug/kg	2	
Carbon tetrachloride	56-23-5	8260B	15	U	15	5.5	ug/kg	2	
Chlorobenzene	108-90-7	8260B	15	U	15	4.6	ug/kg	2	
Chloroethane	75-00-3	8260B	15	U	15	4.0	ug/kg	2	
Chloroform	67-66-3	8260B	15	U	15	2.5	ug/kg	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	15	U	15	3.1	ug/kg	2	
Cyclohexane	110-82-7	8260B	15	U	15	2.1	ug/kg	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	15	UJ ~~U~~	15	4.6	ug/kg	2	ISL
Dibromochloromethane	124-48-1	8260B	15	U	15	1.9	ug/kg	2	
1,2-Dibromoethane (EDB)	106-93-4	8260B	15	U	15	2.6	ug/kg	2	
1,2-Dichlorobenzene	95-50-1	8260B	15	UJ ~~U~~	15	2.8	ug/kg	2	ISL
1,3-Dichlorobenzene	541-73-1	8260B	15	↓ ~~U~~	15	4.0	ug/kg	2	↓
1,4-Dichlorobenzene	106-46-7	8260B	15	↓ ~~U~~	15	4.6	ug/kg	2	↓
Dichlorodifluoromethane	75-71-8	8260B	15	U	15	4.9	ug/kg	2	
1,1-Dichloroethane	75-34-3	8260B	15	U	15	2.2	ug/kg	2	
1,2-Dichloroethane	107-06-2	8260B	15	U	15	3.1	ug/kg	2	
1,1-Dichloroethene	75-35-4	8260B	15	U	15	5.2	ug/kg	2	
cis-1,2-Dichloroethene	156-59-2	8260B	15	U	15	2.3	ug/kg	2	
trans-1,2-Dichloroethene	156-60-5	8260B	15	U	15	4.6	ug/kg	2	
1,2-Dichloropropane	78-87-5	8260B	15	U	15	2.8	ug/kg	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	15	U	15	2.1	ug/kg	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	15	U	15	2.5	ug/kg	2	
Ethylbenzene	100-41-4	8260B	15	U	15	3.4	ug/kg	2	
2-Hexanone	591-78-6	8260B	31	UJ ~~U~~	31	4.0	ug/kg	2	CCH
Isopropylbenzene	98-82-8	8260B	15	UJ ~~U~~	15	2.4	ug/kg	2	ISL
Methyl acetate	79-20-9	8260B	15	U	15	2.1	ug/kg	2	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15	U	15	1.2	ug/kg	2	
4-Methyl-2-pentanone	108-10-1	8260B	31	U	31	4.6	ug/kg	2	
Methylcyclohexane	108-87-2	8260B	15	U	15	1.9	ug/kg	2	
Methylene chloride	75-09-2	8260B	15	U	15	8.0	ug/kg	2	
Styrene	100-42-5	8260B	15	U	15	3.4	ug/kg	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	15	UJ ~~U~~	15	1.4	ug/kg	2	ISL
Tetrachloroethene	127-18-4	8260B	15	U	15	7.0	ug/kg	2	
Toluene	108-88-3	8260B	15	U	15	4.3	ug/kg	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	15	U	15	6.4	ug/kg	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	15	UJ ~~U~~	15	3.1	ug/kg	2	ISL
1,1,1-Trichloroethane	71-55-6	8260B	15	U	15	2.6	ug/kg	2	

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MH
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2121	RRH		22284
2	5035	8260B	1	11/21/2009 0000	RRH		22284

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	15	U	15	2.4	ug/kg	2
Trichloroethene	79-01-6	8260B	15	U	15	5.8	ug/kg	2
Trichlorofluoromethane	75-69-4	8260B	15	U	15	4.6	ug/kg	2
Vinyl chloride	75-01-4	8260B	15	U	15	2.6	ug/kg	2
Xylenes (total)	1330-20-7	8260B	15	U	15	8.9	ug/kg	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Bromofluorobenzene		90	85-120		87	85-120
1,2-Dichloroethane-d4		89	53-142		86	53-142
Toluene-d8		102	85-115		98	85-115

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2144	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	38	U	38	3.4	ug/kg	1
Benzene	71-43-2	8260B	9.4	U	9.4	2.1	ug/kg	1
Bromodichloromethane	75-27-4	8260B	9.4	U	9.4	2.1	ug/kg	1
Bromoform	75-25-2	8260B	19	U	19	1.3	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	19	U	19	3.4	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	19	R ~~U~~	19	4.5	ug/kg	1 ICB
Carbon disulfide	75-15-0	8260B	9.4	U	9.4	2.4	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	9.4	U	9.4	3.4	ug/kg	1
Chlorobenzene	108-90-7	8260B	9.4	U	9.4	2.8	ug/kg	1
Chloroethane	75-00-3	8260B	9.4	U	9.4	2.4	ug/kg	1
Chloroform	67-66-3	8260B	9.4	U	9.4	1.6	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	9.4	U	9.4	1.9	ug/kg	1
Cyclohexane	110-82-7	8260B	9.4	U	9.4	1.3	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	9.4	U	9.4	2.8	ug/kg	1
Dibromochloromethane	124-48-1	8260B	9.4	U	9.4	1.2	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	9.4	U	9.4	1.6	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	9.4	U	9.4	1.7	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	9.4	U	9.4	2.4	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	9.4	U	9.4	2.8	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	9.4	U	9.4	3.0	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	9.4	U	9.4	1.4	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	9.4	U	9.4	1.9	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	9.4	U	9.4	3.2	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	9.4	U	9.4	1.4	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	9.4	U	9.4	2.8	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	9.4	U	9.4	1.7	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	9.4	U	9.4	1.3	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	9.4	U	9.4	1.5	ug/kg	1
Ethylbenzene	100-41-4	8260B	9.4	U	9.4	2.1	ug/kg	1
2-Hexanone	591-78-6	8260B	19	UJ ~~U~~	19	2.4	ug/kg	1 CCH
Isopropylbenzene	98-82-8	8260B	9.4	U	9.4	1.5	ug/kg	1
Methyl acetate	79-20-9	8260B	9.4	U	9.4	1.3	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	9.4	U	9.4	0.75	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	19	U	19	2.8	ug/kg	1
Methylcyclohexane	108-87-2	8260B	9.4	U	9.4	1.1	ug/kg	1
Methylene chloride	75-09-2	8260B	9.4	U	9.4	4.9	ug/kg	1
Styrene	100-42-5	8260B	9.4	U	9.4	2.1	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	9.4	U	9.4	0.88	ug/kg	1
Tetrachloroethene	127-18-4	8260B	9.4	U	9.4	4.3	ug/kg	1
Toluene	108-88-3	8260B	9.4	U	9.4	2.6	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	9.4	U	9.4	3.9	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	9.4	U	9.4	1.9	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	9.4	U	9.4	1.6	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	9.4	U	9.4	1.5	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/6/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2144	RRH		22284

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	9.4	U	9.4	3.6	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	9.4	U	9.4	2.8	ug/kg	1
Vinyl chloride	75-01-4	8260B	9.4	U	9.4	1.6	ug/kg	1
Xylenes (total)	1330-20-7	8260B	9.4	U	9.4	5.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		99	85-120
1,2-Dichloroethane-d4		95	53-142
Toluene-d8		106	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-110909**
Date Sampled: **11/09/2009**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0156	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-110909**
Date Sampled: **11/09/2009**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0156	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		105	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RaW
3/6/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK10035

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 6, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD106-0-0.5-09D	KK10035-001	Soil
2	IR86-SD105-0-0.5-09D	KK10035-002	Soil
3	IR86-SD108-0-0.5-09D	KK10035-003	Soil
4	IR86-SD109-0-0.5-09D	KK10035-004	Soil
5	IR86-SD110-0-0.5-09D	KK10035-005	Soil
5MS	IR86-SD110-0-0.5-09DMS	KK10035-005MS	Soil
5MSD	IR86-SD110-0-0.5-09DMSD	KK10035-005MSD	Soil
6	IR86-SD112-0-0.5-09D	KK10035-006	Soil
7	IR86-SD113-0-0.5-09D	KK10035-007	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Selenium	0.18	0.90	U	1, 4, 7
Sodium	68	340	U	All Samples

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-FB01-110909 (T)	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS%R/MSD%R/RPD	Qualifier	Affected Samples
5	Potassium	Ok/140/Ok	J	All Soil Samples

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 1945	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	11000		21	2.7	mg/kg	1
Antimony	7440-36-0	6010C	0.66	J	1.0	0.37	mg/kg	1
Arsenic	7440-38-2	6010C	2.4		1.0	0.39	mg/kg	1
Barium	7440-39-3	6010C	48		2.7	0.19	mg/kg	1
Beryllium	7440-41-7	6010C	0.19	J	0.42	0.058	mg/kg	1
Cadmium	7440-43-9	6010C	3.1		0.21	0.022	mg/kg	1
Calcium	7440-70-2	6010C	35000		520	37	mg/kg	1
Chromium	7440-47-3	6010C	20		0.52	0.11	mg/kg	1
Cobalt	7440-48-4	6010C	3.6		2.7	0.19	mg/kg	1
Copper	7440-50-8	6010C	15		0.52	0.10	mg/kg	1
Iron	7439-89-6	6010C	6900		10	3.4	mg/kg	1
Lead	7439-92-1	6010C	22		1.0	0.19	mg/kg	1
Magnesium	7439-95-4	6010C	2600		520	38	mg/kg	1
Manganese	7439-96-5	6010C	97		1.6	0.12	mg/kg	1
Nickel	7440-02-0	6010C	11		4.2	0.31	mg/kg	1
Potassium	7440-09-7	6010C	700 J		520	23	mg/kg	1 MJH
Selenium	7782-49-2	6010C	1.0 0.67 U	BJ	1.0	0.36	mg/kg	1 MBL
Silver	7440-22-4	6010C	0.24	J	0.52	0.087	mg/kg	1
Sodium	7440-23-5	6010C	520 250 U	BJ	520	36	mg/kg	1 MBL
Thallium	7440-28-0	6010C	5.2	U	5.2	0.53	mg/kg	1
Vanadium	7440-62-2	6010C	22		5.2	0.31	mg/kg	1
Zinc	7440-66-6	6010C	100		5.2	0.71	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 3/6/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-0-0.5-09D**
Date Sampled: **11/08/2009 1055**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-001**
Matrix: **Solid**
% Solids: **45.2** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2256	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.035**	**J**	**0.17**	**0.012**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

kcw
3/6/10

2

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 1948	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	12000		20	2.6	mg/kg	1
Antimony	7440-36-0	6010C	0.63	J	1.0	0.36	mg/kg	1
Arsenic	7440-38-2	6010C	2.6		1.0	0.38	mg/kg	1
Barium	7440-39-3	6010C	57		2.7	0.19	mg/kg	1
Beryllium	7440-41-7	6010C	0.51		0.41	0.057	mg/kg	1
Cadmium	7440-43-9	6010C	3.9		0.20	0.022	mg/kg	1
Calcium	7440-70-2	6010C	13000		510	36	mg/kg	1
Chromium	7440-47-3	6010C	24		0.51	0.10	mg/kg	1
Cobalt	7440-48-4	6010C	4.7		2.7	0.19	mg/kg	1
Copper	7440-50-8	6010C	25		0.51	0.099	mg/kg	1
Iron	7439-89-6	6010C	6900		10	3.4	mg/kg	1
Lead	7439-92-1	6010C	29		1.0	0.19	mg/kg	1
Magnesium	7439-95-4	6010C	1700		510	38	mg/kg	1
Manganese	7439-96-5	6010C	110		1.5	0.12	mg/kg	1
Nickel	7440-02-0	6010C	15		4.1	0.31	mg/kg	1
Potassium	7440-09-7	6010C	620 J		510	22	mg/kg	1 MSH ✓
Selenium	7782-49-2	6010C	0.98	BJ	1.0	0.36	mg/kg	1
Silver	7440-22-4	6010C	0.40	J	0.51	0.086	mg/kg	1
Sodium	7440-23-5	6010C	510 ~~210~~ U	BJ	510	35	mg/kg	1 MBL ✓
Thallium	7440-28-0	6010C	5.1	U	5.1	0.52	mg/kg	1
Vanadium	7440-62-2	6010C	26		5.1	0.31	mg/kg	1
Zinc	7440-66-6	6010C	160		5.1	0.70	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-0-0.5-09D**
Date Sampled: **11/08/2009 1135**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-002**
Matrix: **Solid**
% Solids: **46.8** **11/10/2009 2014**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2258	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.052**	**J**	**0.18**	**0.013**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 1952	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	14000		16	2.0	mg/kg	1
Antimony	7440-36-0	6010C	5.9		0.80	0.28	mg/kg	1
Arsenic	7440-38-2	6010C	0.80	U	0.80	0.30	mg/kg	1
Barium	7440-39-3	6010C	52		2.1	0.14	mg/kg	1
Beryllium	7440-41-7	6010C	0.23	J	0.32	0.045	mg/kg	1
Cadmium	7440-43-9	6010C	7.1		0.16	0.017	mg/kg	1
Calcium	7440-70-2	6010C	2400		400	28	mg/kg	1
Chromium	7440-47-3	6010C	31		0.40	0.081	mg/kg	1
Cobalt	7440-48-4	6010C	6.8		2.1	0.15	mg/kg	1
Copper	7440-50-8	6010C	26		0.40	0.077	mg/kg	1
Iron	7439-89-6	6010C	6900		8.0	2.6	mg/kg	1
Lead	7439-92-1	6010C	66		0.80	0.15	mg/kg	1
Magnesium	7439-95-4	6010C	830		400	29	mg/kg	1
Manganese	7439-96-5	6010C	44		1.2	0.092	mg/kg	1
Nickel	7440-02-0	6010C	16		3.2	0.24	mg/kg	1
Potassium	7440-09-7	6010C	610 J		400	18	mg/kg	1 MSI
Selenium	7782-49-2	6010C	28	~~B~~	0.80	0.28	mg/kg	1
Silver	7440-22-4	6010C	1.1		0.40	0.067	mg/kg	1
Sodium	7440-23-5	6010C	400 ~~160~~ U	~~BJ~~	400	27	mg/kg	1 MBL
Thallium	7440-28-0	6010C	3.4	J	4.0	0.41	mg/kg	1
Vanadium	7440-62-2	6010C	30		4.0	0.24	mg/kg	1
Zinc	7440-66-6	6010C	160		4.0	0.54	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

WW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-0-0.5-09D**
Date Sampled: **11/08/2009 1510**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-003**
Matrix: **Solid**
% Solids: **61.5** **11/10/2009 2014**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2300	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.078**	**J**	**0.13**	**0.0095**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 1955	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	17000		23	2.9	mg/kg	1	
Antimony	7440-36-0	6010C	0.66	J	1.2	0.41	mg/kg	1	
Arsenic	7440-38-2	6010C	2.8		1.2	0.43	mg/kg	1	
Barium	7440-39-3	6010C	39		3.0	0.21	mg/kg	1	
Beryllium	7440-41-7	6010C	0.20	J	0.46	0.064	mg/kg	1	
Cadmium	7440-43-9	6010C	4.7		0.23	0.024	mg/kg	1	
Calcium	7440-70-2	6010C	6100		580	41	mg/kg	1	
Chromium	7440-47-3	6010C	27		0.58	0.12	mg/kg	1	
Cobalt	7440-48-4	6010C	4.3		3.0	0.21	mg/kg	1	
Copper	7440-50-8	6010C	17		0.58	0.11	mg/kg	1	
Iron	7439-89-6	6010C	9900		12	3.8	mg/kg	1	
Lead	7439-92-1	6010C	45		1.2	0.21	mg/kg	1	
Magnesium	7439-95-4	6010C	970		580	42	mg/kg	1	
Manganese	7439-96-5	6010C	61		1.7	0.13	mg/kg	1	
Nickel	7440-02-0	6010C	12		4.6	0.35	mg/kg	1	
Potassium	7440-09-7	6010C	950	J	580	25	mg/kg	1	MSH
Selenium	7782-49-2	6010C	1.2 ~~0.76~~	U ~~BJ~~	1.2	0.40	mg/kg	1	MBL
Silver	7440-22-4	6010C	0.31	J	0.58	0.097	mg/kg	1	
Sodium	7440-23-5	6010C	580 ~~230~~	U ~~BJ~~	580	39	mg/kg	1	MBL
Thallium	7440-28-0	6010C	5.8	U	5.8	0.59	mg/kg	1	
Vanadium	7440-62-2	6010C	35		5.8	0.35	mg/kg	1	
Zinc	7440-66-6	6010C	110		5.8	0.78	mg/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-0-0.5-09D**
Date Sampled: **11/08/2009 1530**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-004**
Matrix: **Solid**
% Solids: **43.3** **11/10/2009 2014**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2303	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.058**	**J**	**0.18**	**0.013**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 1959	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	16000		20	2.5	mg/kg	1
Antimony	7440-36-0	6010C	0.61	J	1.0	0.35	mg/kg	1
Arsenic	7440-38-2	6010C	2.9		1.0	0.37	mg/kg	1
Barium	7440-39-3	6010C	40		2.6	0.18	mg/kg	1
Beryllium	7440-41-7	6010C	0.27	J	0.40	0.056	mg/kg	1
Cadmium	7440-43-9	6010C	8.2		0.20	0.021	mg/kg	1
Calcium	7440-70-2	6010C	5700		500	35	mg/kg	1
Chromium	7440-47-3	6010C	32		0.50	0.10	mg/kg	1
Cobalt	7440-48-4	6010C	7.9		2.6	0.18	mg/kg	1
Copper	7440-50-8	6010C	35		0.50	0.097	mg/kg	1
Iron	7439-89-6	6010C	11000		10	3.3	mg/kg	1
Lead	7439-92-1	6010C	51		1.0	0.19	mg/kg	1
Magnesium	7439-95-4	6010C	970		500	37	mg/kg	1
Manganese	7439-96-5	6010C	65		1.5	0.12	mg/kg	1
Nickel	7440-02-0	6010C	19		4.0	0.30	mg/kg	1
Potassium	7440-09-7	6010C	870 J		500	22	mg/kg	1 MSH
Selenium	7782-49-2	6010C	1.2	~~B~~	1.0	0.35	mg/kg	1
Silver	7440-22-4	6010C	0.59		0.50	0.084	mg/kg	1
Sodium	7440-23-5	6010C	500 220 U	~~BJ~~	500	34	mg/kg	1 MB
Thallium	7440-28-0	6010C	5.0	U	5.0	0.51	mg/kg	1
Vanadium	7440-62-2	6010C	37		5.0	0.30	mg/kg	1
Zinc	7440-66-6	6010C	190		5.0	0.68	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LEW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-0-0.5-09D**
Date Sampled: **11/08/2009 1600**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-005**
Matrix: **Solid**
% Solids: **49.3** **11/10/2009 2014**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2309	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.11**	**J**	**0.17**	**0.012**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 2020	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	16000		28	3.6	mg/kg	1	
Antimony	7440-36-0	6010C	1.4		1.4	0.50	mg/kg	1	
Arsenic	7440-38-2	6010C	9.7		1.4	0.52	mg/kg	1	
Barium	7440-39-3	6010C	78		3.6	0.25	mg/kg	1	
Beryllium	7440-41-7	6010C	1.2		0.56	0.078	mg/kg	1	
Cadmium	7440-43-9	6010C	3.8		0.28	0.029	mg/kg	1	
Calcium	7440-70-2	6010C	5800		700	49	mg/kg	1	
Chromium	7440-47-3	6010C	36		0.70	0.14	mg/kg	1	
Cobalt	7440-48-4	6010C	5.4		3.6	0.26	mg/kg	1	
Copper	7440-50-8	6010C	16		0.70	0.13	mg/kg	1	
Iron	7439-89-6	6010C	30000		14	4.6	mg/kg	1	
Lead	7439-92-1	6010C	19		1.4	0.26	mg/kg	1	
Magnesium	7439-95-4	6010C	1100		700	51	mg/kg	1	
Manganese	7439-96-5	6010C	66		2.1	0.16	mg/kg	1	
Nickel	7440-02-0	6010C	14		5.6	0.42	mg/kg	1	
Potassium	7440-09-7	6010C	990	J	700	31	mg/kg	1	MSH
Selenium	7782-49-2	6010C	2.0	~~B~~	1.4	0.48	mg/kg	1	
Silver	7440-22-4	6010C	1.5		0.70	0.12	mg/kg	1	
Sodium	7440-23-5	6010C	700 ~~280~~	u ~~BJ~~	700	48	mg/kg	1	MBL
Thallium	7440-28-0	6010C	1.2	J	7.0	0.71	mg/kg	1	
Vanadium	7440-62-2	6010C	52		7.0	0.42	mg/kg	1	
Zinc	7440-66-6	6010C	130		7.0	0.95	mg/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-0-0.5-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-006**
Matrix: **Solid**
% Solids: **34.7** **11/10/2009 2014**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2318	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.081**	**J**	**0.23**	**0.016**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 2023	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	3200		15	1.9	mg/kg	1
Antimony	7440-36-0	6010C	0.44	J	0.76	0.27	mg/kg	1
Arsenic	7440-38-2	6010C	3.9		0.76	0.28	mg/kg	1
Barium	7440-39-3	6010C	20		2.0	0.14	mg/kg	1
Beryllium	7440-41-7	6010C	0.20	J	0.30	0.042	mg/kg	1
Cadmium	7440-43-9	6010C	0.69		0.15	0.016	mg/kg	1
Calcium	7440-70-2	6010C	1800		380	27	mg/kg	1
Chromium	7440-47-3	6010C	5.7		0.38	0.077	mg/kg	1
Cobalt	7440-48-4	6010C	2.0		2.0	0.14	mg/kg	1
Copper	7440-50-8	6010C	1.9		0.38	0.073	mg/kg	1
Iron	7439-89-6	6010C	14000		7.6	2.5	mg/kg	1
Lead	7439-92-1	6010C	4.1		0.76	0.14	mg/kg	1
Magnesium	7439-95-4	6010C	300	J	380	28	mg/kg	1
Manganese	7439-96-5	6010C	55		1.1	0.087	mg/kg	1
Nickel	7440-02-0	6010C	2.2	J	3.0	0.23	mg/kg	1
Potassium	7440-09-7	6010C	220 J	~~J~~	380	17	mg/kg	1 MSH
Selenium	7782-49-2	6010C	0.76 ~~0.71~~ U	~~BJ~~	0.76	0.26	mg/kg	1 MBL
Silver	7440-22-4	6010C	0.23	J	0.38	0.064	mg/kg	1
Sodium	7440-23-5	6010C	380 ~~350~~ U	~~BJ~~	380	26	mg/kg	1 MBL
Thallium	7440-28-0	6010C	0.69	J	3.8	0.39	mg/kg	1
Vanadium	7440-62-2	6010C	8.2		3.8	0.23	mg/kg	1
Zinc	7440-66-6	6010C	19		3.8	0.51	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Rev 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-0-0.5-09D**
Date Sampled: **11/08/2009 1700**
Date Received: **11/10/2009**

Laboratory ID: **KK10035-007**
Matrix: **Solid**
% Solids: **64.8** **11/10/2009 2014**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/10/2009 2320	BNW	11/10/2009 2040	21413

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.013**	**J**	**0.13**	**0.0089**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Lew 3/6/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 5, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1D	IR86-SW106-09D	KK11033-001	Water
1DMS	IR86-SW106-09DMS	KK11033-001MS	Water
1DMSD	IR86-SW106-09DMSD	KK11033-001MSD	Water
1T	IR86-SW106-09D	KK11033-001	Water
1TMS	IR86-SW106-09DMS	KK11033-001MS	Water
1TMSD	IR86-SW106-09DMSD	KK11033-001MSD	Water
2D	IR86-SW105-09D	KK11033-004	Water
2T	IR86-SW105-09D	KK11033-004	Water
3D	IR86-SW105D-09D	KK11003-005	Water
3T	IR86-SW105D-09D	KK11003-005	Water
4D	IR86-SW108-09D	KK11003-006	Water
4T	IR86-SW108-09D	KK11003-006	Water
5D	IR86-SW110-09D	KK11003-007	Water
5T	IR86-SW110-09D	KK11003-007	Water
6D	IR86-SW112-09D	KK11033-008	Water
6T	IR86-SW112-09D	KK11033-008	Water
7D	IR86-SW113-09D	KK11033-009	Water
7T	IR86-SW113-09D	KK11033-009	Water
8D	IR86-FB01-110909	KK11033-010	Water
8T	IR86-FB01-110909	KK11033-010	Water
9D	IR86-EB01-110909-SW	KK11033-011	Water
9T	IR86-EB01-110909-SW	KK11033-011	Water
10T	IR86-EB01-111009-SW	KK11033-012	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 14 days for cyanide, 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
MB 21810 (T)	Antimony	0.0075	0.0375	U	1T, 2T, 5T
	Arsenic	0.0035	0.0175	U	3T, 5T, 6T
MB 21810 (D)	Antimony	0.0075	0.0375	U	1D
	Arsenic	0.0035	0.0175	U	1D, 2D, 3D, 8D

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-EB01-110909-SW (T)	None - ND	-	-	-	-
IR86-EB01-110909-SW (D)	Aluminum	0.086	0.430	None	See FB
IR86-EB01-111009-SW (T)	None - ND	-	-	-	-
IR86-FB01-110909 (T)	None - ND	-	-	-	-
IR86-FB01-110909 (D)	Aluminum	0.13	0.65	U	1D, 2D, 6D, 7D
	Sodium	1.6	8.0	U	6D

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS%R/MSD%R/RPD	Qualifier	Affected Samples
1D	Calcium	Ok/77%/Ok	J/UJ	All Dissolved Samples

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D (D) mg/L	IR86-SW105D-09D (D) mg/L	RPD	Qualifier
Aluminum	0.065	0.50 U	NC	None
Arsenic	0.0056	0.0037	41%	None
Barium	0.024	0.022	9%	None
Calcium	74	72	3%	None
Iron	0.082	0.10 U	NC	None
Magnesium	2.9	2.8	4%	None
Manganese	0.067	0.064	5%	None
Potassium	2.7	2.9	7%	None
Sodium	9.8	9.5	3%	None

Compound	IR86-SW105-09D (T) mg/L	IR86-SW105D-09D (T) mg/L	RPD	Qualifier
Aluminum	0.24	0.091	90%	None
Arsenic	0.0038	0.0036	5%	None
Barium	0.026	0.025	4%	None
Calcium	75	70	7%	None
Copper	0.0019	0.0016	17%	None
Iron	0.63	0.63	0%	None
Magnesium	3.0	2.8	7%	None
Manganese	0.069	0.065	6%	None
Potassium	3.4	2.8	19%	None
Sodium	9.7	9.1	6%	None
Zinc	0.0061	0.020 U	NC	None

Compound Quantitation - No discrepancies were identified.

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

1D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1805	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	**7429-90-5**	**6010C**	0.50 ~~0.12~~	U J	**0.50**	**0.060**	**mg/L**	**1** FBL
Dissolved Antimony	**7440-36-0**	**6010C**	0.010 ~~0.0031~~	U B J	**0.010**	**0.0030**	**mg/L**	**1** MBL
Dissolved Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0038~~	U B J	**0.010**	**0.0030**	**mg/L**	**1** MBL
Dissolved Barium	**7440-39-3**	**6010C**	**0.015**	**J**	**0.025**	**0.0080**	**mg/L**	**1**
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	**7440-70-2**	**6010C**	**68** J		**5.0**	**1.6**	**mg/L**	**1** MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	**7439-92-1**	**6010C**	**0.0033**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Dissolved Magnesium	**7439-95-4**	**6010C**	**2.4**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Manganese	**7439-96-5**	**6010C**	**0.038**		**0.015**	**0.0049**	**mg/L**	**1**
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	**7440-09-7**	**6010C**	**4.0**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**13**		**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

1 D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2149	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

1T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1751	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	**7440-36-0**	**6010C**	0.0100 ~~0.0047~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.021**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**73**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	**7440-50-8**	**6010C**	**0.0018**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Iron	**7439-89-6**	**6010C**	**0.85**		**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**2.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.077**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**3.2**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**14**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	**7440-66-6**	**6010C**	**0.0067**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

1T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2133	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-004**
Matrix: **Aqueous**

2D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1812	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	**7429-90-5**	**6010C**	0.50 ~~0.065~~	**J**	**0.50**	**0.060**	**mg/L**	**1** FBL
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0056~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Dissolved Barium	**7440-39-3**	**6010C**	**0.024**	**J**	**0.025**	**0.0080**	**mg/L**	**1**
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	**7440-70-2**	**6010C**	**74** J		**5.0**	**1.6**	**mg/L**	**1** MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	**7439-89-6**	**6010C**	**0.082**	**J**	**0.10**	**0.030**	**mg/L**	**1**
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	**7439-95-4**	**6010C**	**2.9**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Manganese	**7439-96-5**	**6010C**	**0.067**		**0.015**	**0.0049**	**mg/L**	**1**
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	**7440-09-7**	**6010C**	**2.7**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**9.8**		**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-004**
Matrix: **Aqueous**

2D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2214	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-004**
Matrix: **Aqueous**

2T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1809	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.24**		**0.20**	**0.060**	**mg/L**	**1**
Antimony	**7440-36-0**	**6010C**	0.010 ~~**0.0038**~~	U ~~**BJ**~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.026**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**75**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	**7440-50-8**	**6010C**	**0.0019**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Iron	**7439-89-6**	**6010C**	**0.63**		**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**3.0**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.069**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**3.4**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**9.7**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	**7440-66-6**	**6010C**	**0.0061**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-004**
Matrix: **Aqueous**

2T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2151	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-005**
Matrix: **Aqueous**

3D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1830	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	7429-90-5	6010C	0.50	U	0.50	0.060	mg/L	1
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0037~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Dissolved Barium	**7440-39-3**	**6010C**	**0.022**	**J**	**0.025**	**0.0080**	**mg/L**	**1**
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	**7440-70-2**	**6010C**	**72** J		**5.0**	**1.6**	**mg/L**	**1** MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	**7439-95-4**	**6010C**	**2.8**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Manganese	**7439-96-5**	**6010C**	**0.064**		**0.015**	**0.0049**	**mg/L**	**1**
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	**7440-09-7**	**6010C**	**2.9**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**9.5**		**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-005**
Matrix: **Aqueous**

3D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2219	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-005**
Matrix: **Aqueous**

3T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1823	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.091**	**J**	**0.20**	**0.060**	**mg/L**	**1**
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0036~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	1 MBL
Barium	**7440-39-3**	**6010C**	**0.025**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**70**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	**7440-50-8**	**6010C**	**0.0016**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Iron	**7439-89-6**	**6010C**	**0.63**		**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**2.8**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.065**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**2.8**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**9.1**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-005**
Matrix: **Aqueous**

3T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2216	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LWS
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-006**
Matrix: **Aqueous**

4D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1837	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	7429-90-5	6010C	0.50	U	0.50	0.060	mg/L	1
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Barium	**7440-39-3**	**6010C**	**0.020**	**J**	**0.025**	**0.0080**	**mg/L**	**1**
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	**7440-70-2**	**6010C**	**61 J**		**5.0**	**1.6**	**mg/L**	**1** MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	**7439-95-4**	**6010C**	**3.5**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Manganese	**7439-96-5**	**6010C**	**0.035**		**0.015**	**0.0049**	**mg/L**	**1**
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	**7440-09-7**	**6010C**	**2.1**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**8.9**		**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	**7440-66-6**	**6010C**	**0.0090**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-006**
Matrix: **Aqueous**

4D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2225	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-006**
Matrix: **Aqueous**

4T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1834	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.088**	**J**	**0.20**	**0.060**	**mg/L**	**1**
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.023**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**66**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**1.9**		**0.10**	**0.030**	**mg/L**	**1**
Lead	**7439-92-1**	**6010C**	**0.0032**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Magnesium	**7439-95-4**	**6010C**	**3.8**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.040**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**2.5**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**9.3**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	**7440-66-6**	**6010C**	**0.011**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-006**
Matrix: **Aqueous**

4T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2222	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-007**
Matrix: **Aqueous**

5D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1844	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	7429-90-5	6010C	0.50	U	0.50	0.060	mg/L	1
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Barium	**7440-39-3**	**6010C**	**0.016**	**J**	**0.025**	**0.0080**	**mg/L**	**1**
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	**7440-70-2**	**6010C**	**53** J		**5.0**	**1.6**	**mg/L**	**1** MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	**7439-95-4**	**6010C**	**2.2**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Manganese	**7439-96-5**	**6010C**	**0.030**		**0.015**	**0.0049**	**mg/L**	**1**
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	**7440-09-7**	**6010C**	**2.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**8.7**		**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	**7440-66-6**	**6010C**	**0.0060**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-007**
Matrix: **Aqueous**

5D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2235	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-007**
Matrix: **Aqueous**

5T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1841	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**3.8**		**0.20**	**0.060**	**mg/L**	**1**
Antimony	**7440-36-0**	**6010C**	0.0100 ~~0.0032~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Arsenic	**7440-38-2**	**6010C**	0.0100 ~~0.0043~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Barium	**7440-39-3**	**6010C**	**0.067**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	**7440-43-9**	**6010C**	**0.0021**		**0.0020**	**0.00060**	**mg/L**	**1**
Calcium	**7440-70-2**	**6010C**	**56**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	**7440-47-3**	**6010C**	**0.012**		**0.0050**	**0.0016**	**mg/L**	**1**
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	**7440-50-8**	**6010C**	**0.011**		**0.0050**	**0.0016**	**mg/L**	**1**
Iron	**7439-89-6**	**6010C**	**33**		**0.10**	**0.030**	**mg/L**	**1**
Lead	**7439-92-1**	**6010C**	**0.010**		**0.010**	**0.0030**	**mg/L**	**1**
Magnesium	**7439-95-4**	**6010C**	**2.5**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.41**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**2.7**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**8.4**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	**7440-62-2**	**6010C**	**0.022**	**J**	**0.050**	**0.016**	**mg/L**	**1**
Zinc	**7440-66-6**	**6010C**	**0.084**		**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-007**
Matrix: **Aqueous**

5T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2233	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-008**
Matrix: **Aqueous**

6D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1851	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Dissolved Aluminum	**7429-90-5**	**6010C**	0.50 ~~0.41~~	U ~~J~~	**0.50**	**0.060**	**mg/L**	**1**	FBL
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Barium	**7440-39-3**	**6010C**	**0.0080**	**J**	**0.025**	**0.0080**	**mg/L**	**1**	
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Dissolved Calcium	**7440-70-2**	**6010C**	**30** J		**5.0**	**1.6**	**mg/L**	**1**	MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Iron	**7439-89-6**	**6010C**	**0.042**	**J**	**0.10**	**0.030**	**mg/L**	**1**	
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Magnesium	**7439-95-4**	**6010C**	**1.8**	**J**	**5.0**	**1.6**	**mg/L**	**1**	
Dissolved Manganese	**7439-96-5**	**6010C**	**0.069**		**0.015**	**0.0049**	**mg/L**	**1**	
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Dissolved Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1	
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Sodium	**7440-23-5**	**6010C**	5.0 ~~4.9~~	U ~~J~~	**5.0**	**1.6**	**mg/L**	**1**	FBL
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-008**
Matrix: **Aqueous**

6D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2241	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-008**
Matrix: **Aqueous**

6T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1848	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0093~~	U ~~BJ~~	**0.010**	**0.0030**	**mg/L**	**1** MBL
Barium	**7440-39-3**	**6010C**	**0.0093**	**J**	**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**33**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**2.0**		**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**2.0**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.076**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**5.3**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

LW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-008**
Matrix: **Aqueous**

6T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2238	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-009**
Matrix: **Aqueous**

7D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1906	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Dissolved Aluminum	**7429-90-5**	**6010C**	0.50 ~~0.12~~	U ✓	**0.50**	**0.060**	**mg/L**	**1**	FBL
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Barium	**7440-39-3**	**6010C**	**0.010**	**J**	**0.025**	**0.0080**	**mg/L**	**1**	
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Dissolved Calcium	**7440-70-2**	**6010C** J	**32**		**5.0**	**1.6**	**mg/L**	**1**	MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1	
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Magnesium	**7439-95-4**	**6010C**	**4.4**	**J**	**5.0**	**1.6**	**mg/L**	**1**	
Dissolved Manganese	**7439-96-5**	**6010C**	**0.063**		**0.015**	**0.0049**	**mg/L**	**1**	
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Dissolved Potassium	**7440-09-7**	**6010C**	**1.9**	**J**	**5.0**	**1.6**	**mg/L**	**1**	
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Dissolved Sodium	**7440-23-5**	**6010C**	**21**		**5.0**	**1.6**	**mg/L**	**1**	
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-009**
Matrix: **Aqueous**

7D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2246	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-009**
Matrix: **Aqueous**

TT

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1855	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.12**	**J**	**0.20**	**0.060**	**mg/L**	**1**
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.0088**	**J**	**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**32**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**1.3**		**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**4.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.064**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**1.9**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**22**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-009**
Matrix: **Aqueous**

7T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2244	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-010**
Matrix: **Aqueous**

8D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1913	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	**7429-90-5**	**6010C**	**0.13**	**J**	**0.50**	**0.060**	**mg/L**	**1**
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	**7440-38-2**	**6010C**	0.010 ~~0.0040~~ U	~~BJ~~	**0.010**	**0.0030**	**mg/L**	1 MBL
Dissolved Barium	7440-39-3	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	7440-70-2	6010C	5.0 UJ	~~U~~	5.0	1.6	mg/L	1 MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Dissolved Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	**7440-23-5**	**6010C**	**1.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-010**
Matrix: **Aqueous**

8D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2251	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

ccw
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-010**
Matrix: **Aqueous**

BT

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1909	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-010**
Matrix: **Aqueous**

8T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2248	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-011**
Matrix: **Aqueous**

9D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1920	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Aluminum	**7429-90-5**	**6010C**	**0.086**	**J**	**0.50**	**0.060**	**mg/L**	**1**
Dissolved Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Barium	7440-39-3	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Dissolved Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Dissolved Calcium	7440-70-2	6010C	5.0 UJ	U	5.0	1.6	mg/L	1 MSL
Dissolved Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Dissolved Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Dissolved Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Dissolved Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Dissolved Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Dissolved Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Dissolved Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Dissolved Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Dissolved Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Dissolved Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Dissolved Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-011**
Matrix: **Aqueous**

9D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2256	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Dissolved Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-011**
Matrix: **Aqueous**

9T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1916	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-011**
Matrix: **Aqueous**

9T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2254	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
3/5/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SW**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-012**
Matrix: **Aqueous**

10T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	11/17/2009 1923	KJC	11/16/2009 1830	21810

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LEW 3/5/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SW**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-012**
Matrix: **Aqueous**

10T

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	11/16/2009 2304	BNW	11/16/2009 1630	21787

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/5/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 5, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW106-09D	KK11033-001	Water
1MS	IR86-SW106-09DMS	KK11033-001MS	Water
1MSD	IR86-SW106-09DMSD	KK11033-001MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - The samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-FB01-110909	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/18/2009 0220	GLR	11/13/2009 2355	21681

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	**206-44-0**	**8270D (SIM)**	**0.030**	**J**	**0.20**	**0.018**	**ug/L**	**1**
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**0.068**	**J**	**0.20**	**0.051**	**ug/L**	**1**
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	**129-00-0**	**8270D (SIM)**	**0.024**	**J**	**0.20**	**0.017**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		50	20-150
Fluoranthene-d10		78	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

few
3/5/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 5, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW106-09D	KK11033-001	Water
1MS	IR86-SW106-09DMS	KK11033-001MS	Water
1MSD	IR86-SW106-09DMSD	KK11033-001MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Endrin aldehyde	47%/29%/50	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB01-110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - No discrepancies were identified.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/26/2009 0004	ASB	11/13/2009 0048	21682

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	**33213-65-9**	**8081B**	**0.057**		**0.026**	**0.025**	**ug/L**	**1**
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	UJ ~~U~~	0.026	0.0031	ug/L	1 MSL
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		49	30-135
Tetrachloro-m-xylene		77	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/5/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/19/2009 2048	NCM	11/13/2009 0048	21684

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		50	40-135
Tetrachloro-m-xylene		73	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/5/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 5, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW106-09D	KK11033-001	Water
1MS	IR86-SW106-09DMS	KK11033-001MS	Water
1MSD	IR86-SW106-09DMSD	KK11033-001MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - The samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Atrazine	Ok/18%/130	J/UJ
	Benzaldehyde	Ok/Ok/21	None for RPD alone

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1 (cont.)	Carbazole	Ok/Ok/21	None for RPD alone
	4-Chloroaniline	Ok/Ok/60	
	Di-n-octylphthalate	Ok/Ok/42	
	Bis(2-Ethylhexyl)phthalate	Ok/Ok/42	
	3-Nitroaniline	Ok/Ok/58	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
MB	4-Bromophenyl phenyl ether	0.27	1.35	None	All ND
	4-Nitrophenol	0.50	2.5		

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01-110909-SW	Bis(2-Ethylhexyl)phthalate	1.4	14	U	1
IR86-FB01-110909	Bis(2-Ethylhexyl)phthalate	1.4	14	None	See EB

Field Duplicates - Field duplicate samples were not included in this data package.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0619	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10 UJ	~~U~~	10	0.20	ug/L	1 MSL
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	**84-74-2**	**8270D**	**0.36**	**J**	**5.1**	**0.061**	**ug/L**	**1**
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	5.1U ~~**0.24**~~	**J**	**5.1**	**0.11**	**ug/L**	**1** EBL
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/07/2009 0619	MZ	11/13/2009 2355	21686

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		63	40-110
2-Fluorobiphenyl		61	50-110
Terphenyl-d14		64	50-135
2-Fluorophenol		52	20-110
Phenol-d5		59	10-115
2,4,6-Tribromophenol		93	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 5, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW106-09D	KK11033-013	Water
2	IR86-SW105-09D	KK11033-016	Water
3	IR86-SW105D-09D	KK11033-017	Water
4	IR86-SW108-09D	KK11033-018	Water
5	IR86-SW110-09D	KK11033-019	Water
6	IR86-SW112-09D	KK11033-020	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB01-110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SW105-09D ug/L	IR86-SW105D-09D ug/L	RPD	Qualifier
Toluene	0.57	0.56	2%	None

Tentatively Identified Compounds (TICs) - TICs were not identified.

Compound Quantitation - No discrepancies were identified.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-013**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0238	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.20**	**J**	**1.0**	**0.17**	**ug/L**	**2**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW106-09D**
Date Sampled: **11/08/2009 1015**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-013**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0238	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-120
Toluene-d8		111	85-120
Bromofluorobenzene		115	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-016**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0300	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	**108-88-3**	**8260B**	**0.57**	**J**	**1.0**	**0.17**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105-09D**
Date Sampled: **11/08/2009 1145**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-016**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0300	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-120
Toluene-d8		100	85-120
Bromofluorobenzene		105	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-017**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0321	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	**108-88-3**	**8260B**	**0.56**	**J**	**1.0**	**0.17**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW105D-09D**
Date Sampled: **11/08/2009 1150**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-017**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0321	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		101	85-120
Bromofluorobenzene		106	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-018**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0342	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.18**	**J**	**1.0**	**0.17**	**ug/L**	**2**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW108-09D**
Date Sampled: **11/08/2009 1500**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-018**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0342	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

bw
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-019**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0403	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.30**	**J**	**1.0**	**0.17**	**ug/L**	**2**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

lw 3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW110-09D**
Date Sampled: **11/08/2009 1550**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-019**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0403	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-120
Toluene-d8		109	85-120
Bromofluorobenzene		113	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fw
5/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-020**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0424	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.20**	**J**	**1.0**	**0.17**	**ug/L**	**2**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**0.12**	**J**	**1.0**	**0.087**	**ug/L**	**2**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	**127-18-4**	**8260B**	**0.20**	**J**	**1.0**	**0.014**	**ug/L**	**2**
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/5/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW112-09D**
Date Sampled: **11/08/2009 1645**
Date Received: **11/11/2009**

Laboratory ID: **KK11033-020**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	11/21/2009 0424	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.15**	**J**	**0.50**	**0.024**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/5/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11042

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 7, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD107-0-0.5-09D	KK11042-005	Soil
1MS*	IR86-SD107-0-0.5-09DMS	KK11042-005MS	Soil
1MSD*	IR86-SD107-0-0.5-09DMSD	KK11042-005MSD	Soil
2	IR86-SD107D-0-0.5-09D	KK11042-006	Soil

* - Mercury only

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Selenium	0.18	0.90	U	1, 2
Sodium	68	340	U	1, 2

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-FB01-110909 (T)	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD107-0-0.5-09D mg/kg	IR86-SD107D-0-0.5-09D mg/kg	RPD	Qualifier
Aluminum	9400	9500	1%	None
Antimony	0.29	0.57 U	NC	None
Arsenic	0.85	1.1	26%	None
Barium	20	20	0%	None
Beryllium	0.036	0.059	48%	None
Cadmium	0.56	0.73	26%	None
Calcium	1400	1500	7%	None
Chromium	11	11	0%	None
Cobalt	1.0	1.0	0%	None
Copper	3.3	3.6	9%	None
Iron	3400	3400	0%	None
Lead	14	14	0%	None
Magnesium	410	420	2%	None
Manganese	14	16	13%	None
Nickel	2.6	3.1	18%	None
Potassium	390	440	12%	None
Silver	0.052	0.057	9%	None
Vanadium	15	16	6%	None
Zinc	12	16	29%	None
Mercury	0.098 U	0.013	NC	None

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 2027	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	9400		12	1.5	mg/kg	1
Antimony	7440-36-0	6010C	0.29	J	0.60	0.21	mg/kg	1
Arsenic	7440-38-2	6010C	0.85		0.60	0.22	mg/kg	1
Barium	7440-39-3	6010C	20		1.6	0.11	mg/kg	1
Beryllium	7440-41-7	6010C	0.036	J	0.24	0.034	mg/kg	1
Cadmium	7440-43-9	6010C	0.56		0.12	0.013	mg/kg	1
Calcium	7440-70-2	6010C	1400		300	21	mg/kg	1
Chromium	7440-47-3	6010C	11		0.30	0.061	mg/kg	1
Cobalt	7440-48-4	6010C	1.0	J	1.6	0.11	mg/kg	1
Copper	7440-50-8	6010C	3.3		0.30	0.058	mg/kg	1
Iron	7439-89-6	6010C	3400		6.0	2.0	mg/kg	1
Lead	7439-92-1	6010C	14		0.60	0.11	mg/kg	1
Magnesium	7439-95-4	6010C	410		300	22	mg/kg	1
Manganese	7439-96-5	6010C	14		0.90	0.069	mg/kg	1
Nickel	7440-02-0	6010C	2.6		2.4	0.18	mg/kg	1
Potassium	7440-09-7	6010C	390		300	13	mg/kg	1
Selenium	7782-49-2	6010C	0.60 ~~0.44~~	U ~~BJ~~	0.60	0.21	mg/kg	1 MBL
Silver	7440-22-4	6010C	0.052	J	0.30	0.050	mg/kg	1
Sodium	7440-23-5	6010C	300 ~~110~~	U ~~BJ~~	300	21	mg/kg	1 MBL
Thallium	7440-28-0	6010C	3.0	U	3.0	0.31	mg/kg	1
Vanadium	7440-62-2	6010C	15		3.0	0.18	mg/kg	1
Zinc	7440-66-6	6010C	12		3.0	0.41	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW 3/7/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/21/2009 1738	BNW	11/21/2009 1630	21919

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7471B	0.098	U	0.098	0.0070	mg/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

UW
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006** 2
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010C	1	11/17/2009 2030	KJC	11/16/2009 2020	21826

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**9500**		**11**	**1.4**	**mg/kg**	**1**
Antimony	7440-36-0	6010C	0.57	U	0.57	0.20	mg/kg	1
Arsenic	**7440-38-2**	**6010C**	**1.1**		**0.57**	**0.21**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010C**	**20**		**1.5**	**0.10**	**mg/kg**	**1**
Beryllium	**7440-41-7**	**6010C**	**0.059**	**J**	**0.23**	**0.032**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010C**	**0.73**		**0.11**	**0.012**	**mg/kg**	**1**
Calcium	**7440-70-2**	**6010C**	**1500**		**280**	**20**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010C**	**11**		**0.28**	**0.057**	**mg/kg**	**1**
Cobalt	**7440-48-4**	**6010C**	**1.0**	**J**	**1.5**	**0.10**	**mg/kg**	**1**
Copper	**7440-50-8**	**6010C**	**3.6**		**0.28**	**0.055**	**mg/kg**	**1**
Iron	**7439-89-6**	**6010C**	**3400**		**5.7**	**1.9**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010C**	**14**		**0.57**	**0.11**	**mg/kg**	**1**
Magnesium	**7439-95-4**	**6010C**	**420**		**280**	**21**	**mg/kg**	**1**
Manganese	**7439-96-5**	**6010C**	**16**		**0.85**	**0.065**	**mg/kg**	**1**
Nickel	**7440-02-0**	**6010C**	**3.1**		**2.3**	**0.17**	**mg/kg**	**1**
Potassium	**7440-09-7**	**6010C**	**440**		**280**	**12**	**mg/kg**	**1**
Selenium	**7782-49-2**	**6010C**	0.57 ~~**0.41**~~	U ~~**BJ**~~	**0.57**	**0.20**	**mg/kg**	**1** MBL
Silver	**7440-22-4**	**6010C**	**0.057**	**J**	**0.28**	**0.048**	**mg/kg**	**1**
Sodium	**7440-23-5**	**6010C**	280 ~~**100**~~	U ~~**BJ**~~	**280**	**19**	**mg/kg**	**1** MBL
Thallium	7440-28-0	6010C	2.8	U	2.8	0.29	mg/kg	1
Vanadium	**7440-62-2**	**6010C**	**16**		**2.8**	**0.17**	**mg/kg**	**1**
Zinc	**7440-66-6**	**6010C**	**16**		**2.8**	**0.38**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/7/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7471B	1	11/21/2009 1748	BNW	11/21/2009 1630	21919

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	**7439-97-6**	**7471B**	**0.013**	**J**	**0.097**	**0.0069**	**mg/kg**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11042

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 7, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB01-110909	KK11042-002	Water
2	IR86-EB01-110909-SW	KK11042-003	Water
2MS	IR86-EB01-110909-SWMS	KK11042-003MS	Water
2MSD	IR86-EB01-110909-SWMSD	KK11042-003MSD	Water
3	IR86-SD107-0-0.5-09D	KK11042-005	Soil
4	IR86-SD107D-0-0.5-09D	KK11042-006	Soil
4MS	IR86-SD107D-0-0.5-09DMS	KK11042-006MS	Soil
4MSD	IR86-SD107D-0-0.5-09DMSD	KK11042-006MSD	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - Several samples exhibited "0D" surrogate recoveries due to being diluted out. No action was taken on this basis.

MS/MSD - The MS/SD samples exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD107-09D ug/kg	IR86-SD107D-09D ug/kg	RPD	Qualifier
Anthracene	4.1	9.3	78%	None
Benzo(a)anthracene	36	56	43%	None
Benzo(a)pyrene	43	66	42%	None
Benzo(b)fluoranthene	68	110	47%	None
Benzo(g,h,i)perylene	44	67	41%	None
Benzo(k)fluoranthene	23	38	49%	None
Chrysene	40	78	64%	None
Dibenzo(a,h)anthracene	13	19	38%	None
Fluoranthene	61	110	57%	None
Fluorene	3.8 U	1.5	NC	None
Indeno(1,2,3-cd)pyrene	41	63	42%	None
Naphthalene	1.7	1.7	0%	None
Phenanthrene	11	27	84%	None
Pyrene	47	92	65%	None

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/18/2009 1446	GLR	11/16/2009 2229	21822

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		61	20-150
Fluoranthene-d10		78	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/18/2009 1130	GLR	11/16/2009 2229	21822

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.067	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.043	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.054	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.033	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.025	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		51	20-150
Fluoranthene-d10		82	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	12/23/2009 0314	KSH	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.8	U	3.8	0.95	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.8	U	3.8	1.1	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**4.1**		**3.8**	**0.58**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**36**		**3.8**	**0.67**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**43**		**3.8**	**0.75**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**68**		**3.8**	**0.57**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**44**		**3.8**	**0.74**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**23**		**3.8**	**0.55**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**40**		**3.8**	**0.51**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**13**		**3.8**	**0.58**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**61**		**3.8**	**0.48**	**ug/kg**	**1**
Fluorene	86-73-7	8270D (SIM)	3.8	U	3.8	0.65	ug/kg	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**41**		**3.8**	**1.1**	**ug/kg**	**1**
Naphthalene	**91-20-3**	**8270D (SIM)**	**1.7**	**J**	**3.8**	**1.1**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**11**		**3.8**	**0.82**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**47**		**3.8**	**0.57**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		52	20-150
Fluoranthene-d10		92	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D (SIM)	1	12/23/2009 0334	KSH	11/18/2009 2010	21984

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	3.4	U	3.4	0.85	ug/kg	1
Acenaphthylene	208-96-8	8270D (SIM)	3.4	U	3.4	0.97	ug/kg	1
Anthracene	**120-12-7**	**8270D (SIM)**	**9.3**		**3.4**	**0.52**	**ug/kg**	**1**
Benzo(a)anthracene	**56-55-3**	**8270D (SIM)**	**56**		**3.4**	**0.61**	**ug/kg**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D (SIM)**	**66**		**3.4**	**0.68**	**ug/kg**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D (SIM)**	**110**		**3.4**	**0.51**	**ug/kg**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D (SIM)**	**67**		**3.4**	**0.67**	**ug/kg**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D (SIM)**	**38**		**3.4**	**0.49**	**ug/kg**	**1**
Chrysene	**218-01-9**	**8270D (SIM)**	**78**		**3.4**	**0.46**	**ug/kg**	**1**
Dibenzo(a,h)anthracene	**53-70-3**	**8270D (SIM)**	**19**		**3.4**	**0.52**	**ug/kg**	**1**
Fluoranthene	**206-44-0**	**8270D (SIM)**	**110**		**3.4**	**0.43**	**ug/kg**	**1**
Fluorene	**86-73-7**	**8270D (SIM)**	**1.5**	**J**	**3.4**	**0.58**	**ug/kg**	**1**
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D (SIM)**	**63**		**3.4**	**1.0**	**ug/kg**	**1**
Naphthalene	**91-20-3**	**8270D (SIM)**	**1.7**	**J**	**3.4**	**1.0**	**ug/kg**	**1**
Phenanthrene	**85-01-8**	**8270D (SIM)**	**27**		**3.4**	**0.74**	**ug/kg**	**1**
Pyrene	**129-00-0**	**8270D (SIM)**	**92**		**3.4**	**0.51**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		51	20-150
Fluoranthene-d10		96	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 3/7/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11042

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 7, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB01-110909	KK11042-002	Water
1MS	IR86-FB01-110909MS	KK11042-002MS	Water
1MSD	IR86-FB01-110909MSD	KK11042-002MSD	Water
2	IR86-EB01-110909-SW	KK11042-003	Water
3	IR86-SD107-0-0.5-09D	KK11042-005	Soil
4	IR86-SD107D-0-0.5-09D	KK11042-006	Soil
4MS	IR86-SD107D-0-0.5-09DMS	KK11042-006MS	Soil
4MSD	IR86-SD107D-0-0.5-09DMSD	KK11042-006MSD	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-FB110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SD	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD107-09D ug/kg	IR86-SD107D-09D ug/kg	RPD	Qualifier
gamma-Chlordane	0.70	1.8 U	NC	None
4,4'-DDD	3.7 U	0.40	NC	None
4,4'-DDE	0.72	0.62	15%	None
4,4'-DDT	2.1	2.0	5%	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All results reported with a (P) flag by the laboratory were further qualified as estimated (J).

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0819	ASB	11/16/2009 2229	21823

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		42	30-135
Tetrachloro-m-xylene		94	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/6/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

D

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	11/24/2009 0835	ASB	11/16/2009 2229	21823

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0053	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0084	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0053	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		73	30-135
Tetrachloro-m-xylene		86	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

CW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	11/27/2009 2046	ASB	11/19/2009 1858	22073

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.9	U	1.9	0.38	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	1.9	U	1.9	0.41	ug/kg	1
alpha-BHC	319-84-6	8081B	1.9	U	1.9	0.44	ug/kg	1
beta-BHC	319-85-7	8081B	1.9	U	1.9	0.34	ug/kg	1
delta-BHC	319-86-8	8081B	1.9	U	1.9	0.36	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	1.9	U	1.9	0.33	ug/kg	1
gamma-Chlordane	**5103-74-2**	**8081B**	**0.70**	~~JP~~ J	**1.9**	**0.27**	**ug/kg**	**1** 2C
4,4'-DDD	72-54-8	8081B	3.7	U	3.7	0.28	ug/kg	1
4,4'-DDE	**72-55-9**	**8081B**	**0.72**	~~JP~~ J	**3.7**	**0.36**	**ug/kg**	**1** 2C
4,4'-DDT	**50-29-3**	**8081B**	**2.1**	~~JP~~ J	**3.7**	**0.32**	**ug/kg**	**1** 2C
Dieldrin	60-57-1	8081B	3.7	U	3.7	0.37	ug/kg	1
Endosulfan I	959-98-8	8081B	1.9	U	1.9	0.38	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.7	U	3.7	0.28	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.7	U	3.7	0.26	ug/kg	1
Endrin	72-20-8	8081B	3.7	U	3.7	0.37	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.7	U	3.7	0.34	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.7	U	3.7	0.25	ug/kg	1
Heptachlor	76-44-8	8081B	1.9	U	1.9	0.44	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	1.9	U	1.9	0.35	ug/kg	1
Methoxychlor	72-43-5	8081B	19	U	19	1.5	ug/kg	1
Toxaphene	8001-35-2	8081B	34	U	34	10	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		98	55-130
Tetrachloro-m-xylene		82	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lew 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	11/27/2009 2133	ASB	11/19/2009 1858	22073

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	1.8	U	1.8	0.37	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	1.8	U	1.8	0.39	ug/kg	1
alpha-BHC	319-84-6	8081B	1.8	U	1.8	0.42	ug/kg	1
beta-BHC	319-85-7	8081B	1.8	U	1.8	0.33	ug/kg	1
delta-BHC	319-86-8	8081B	1.8	U	1.8	0.35	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	1.8	U	1.8	0.31	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	1.8	U	1.8	0.26	ug/kg	1
4,4'-DDD	**72-54-8**	**8081B**	**0.40**	~~JP~~ J	**3.6**	**0.27**	**ug/kg**	**1** 2C
4,4'-DDE	**72-55-9**	**8081B**	**0.62**	J	**3.6**	**0.35**	**ug/kg**	**1**
4,4'-DDT	**50-29-3**	**8081B**	**2.0**	~~JP~~ J	**3.6**	**0.30**	**ug/kg**	**1** 2C
Dieldrin	60-57-1	8081B	3.6	U	3.6	0.36	ug/kg	1
Endosulfan I	959-98-8	8081B	1.8	U	1.8	0.37	ug/kg	1
Endosulfan II	33213-65-9	8081B	3.6	U	3.6	0.27	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	3.6	U	3.6	0.25	ug/kg	1
Endrin	72-20-8	8081B	3.6	U	3.6	0.36	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	3.6	U	3.6	0.33	ug/kg	1
Endrin ketone	53494-70-5	8081B	3.6	U	3.6	0.24	ug/kg	1
Heptachlor	76-44-8	8081B	1.8	U	1.8	0.42	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	1.8	U	1.8	0.34	ug/kg	1
Methoxychlor	72-43-5	8081B	18	U	18	1.5	ug/kg	1
Toxaphene	8001-35-2	8081B	33	U	33	9.9	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		85	55-130
Tetrachloro-m-xylene		76	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW 3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/24/2009 1309	NCM	11/16/2009 2229	21824

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		46	40-135
Tetrachloro-m-xylene		105	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	11/24/2009 1322	NCM	11/16/2009 2229	21824

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.053	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.53	U	0.53	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.53	U	0.53	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		81	40-135
Tetrachloro-m-xylene		96	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1606	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	37	U	37	1.2	ug/kg	1
Aroclor 1221	11104-28-2	8082A	76	U	76	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	37	U	37	3.7	ug/kg	1
Aroclor 1242	53469-21-9	8082A	37	U	37	2.6	ug/kg	1
Aroclor 1248	12672-29-6	8082A	37	U	37	4.3	ug/kg	1
Aroclor 1254	11097-69-1	8082A	37	U	37	2.0	ug/kg	1
Aroclor 1260	11096-82-5	8082A	37	U	37	6.4	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		79	60-125
Tetrachloro-m-xylene		77	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/6/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8082A	1	11/24/2009 1618	NCM	11/19/2009 1801	22070

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	39	U	39	1.3	ug/kg	1
Aroclor 1221	11104-28-2	8082A	79	U	79	11	ug/kg	1
Aroclor 1232	11141-16-5	8082A	39	U	39	3.9	ug/kg	1
Aroclor 1242	53469-21-9	8082A	39	U	39	2.7	ug/kg	1
Aroclor 1248	12672-29-6	8082A	39	U	39	4.5	ug/kg	1
Aroclor 1254	11097-69-1	8082A	39	U	39	2.1	ug/kg	1
Aroclor 1260	11096-82-5	8082A	39	U	39	6.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		81	60-125
Tetrachloro-m-xylene		80	22-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/6/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11042

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 7, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-FB01-110909	KK11042-002	Water
2	IR86-EB01-110909-SW	KK11042-003	Water
3	IR86-SD107-0-0.5-09D	KK11042-004	Soil
4	IR86-SD107D-0-0.5-09D	KK11042-005	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples, 14 days for soil samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
3	Nitrobenzene-d5	23%	J/UJ - All compounds
	2-Fluorobiphenyl	27%	
	2-Fluorophenol	25%	
	Phenol-d5	19%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Acetophenone	27%/Ok/Ok	J/UJ
	Atrazine	0.69%/4.6%/150	J/R
	1,1'-Biphenyl	26%/ Ok/Ok	J/UJ
	4-Bromophenyl phenyl ether	29%/ Ok/Ok	J/UJ
	Butyl benzyl phthalate	28%/ Ok/Ok	J/UJ
	Caprolactam	15%/ Ok/72	J/UJ
	Carbazole	19%/ Ok/49	J/UJ
	4-Chloroaniline	7.8%/ 9.4%/Ok	J/R
	bis(2-Chloroethoxy)methane	18%/ Ok/64	J/UJ
	bis(2-Chloroethyl)ether	29%/ Ok/Ok	J/UJ
	bis(2-Chloroisopropyl)ether	29%/ Ok/Ok	J/UJ
	2-Chlorophenol	28%/ Ok/Ok	J/UJ
	4-Chlorophenyl phenyl ether	29%/ Ok/Ok	J/UJ
	Dibenzofuran	29%/ Ok/Ok	J/UJ
	2,4-Dichlorophenol	29%/ Ok/Ok	J/UJ
	4,6-Dinitro-2-methylphenol	29%/ Ok/Ok	J/UJ
	2,4-Dinitrophenol	29%/ Ok/Ok	J/UJ
	Bis(2-ethylhexyl)phthalate	26%/ Ok/Ok	J/UJ
	Hexachlorobenzene	28%/ Ok/Ok	J/UJ
	Hexachlorobutadiene	26%/ 29%/Ok	J/UJ
	Hexachlorocyclopentadiene	17%/ 19%/Ok	J/UJ
	Hexachloroethane	28%/ Ok/Ok	J/UJ
	2-Methylnaphthalene	27%/ Ok/Ok	J/UJ
	2-Methylphenol	21%/ 25%/Ok	J/UJ
	3 &4-Methylphenol	29%/ Ok/Ok	J/UJ
	2-Nitroaniline	29%/ Ok/Ok	J/UJ
	3-Nitroaniline	2.0%/ 7.3%/120	J/R
	4-Nitroaniline	9.8%/ 24%/86	J/R
	2-Nitrophenol	27%/ Ok/Ok	J/UJ
	4-Nitrophenol	26%/ 29%/Ok	J/UJ
	N-Nitrosodiphenylamine	15%/ 22%/Ok	J/UJ
	Pentachlorophenol	24%/ 28%/Ok	J/UJ
	Phenol	26%/ Ok/Ok	J/UJ
	2,4,5-Trichlorophenol	27%/ Ok/Ok	J/UJ
	2,4,6-Trichlorophenol	29%/ Ok/Ok	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS21821	4-Chloroaniline	13%	J/UJ	2
	Hexachlorocyclopentadiene	23%	J/UJ	2

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-FB01-110909	bis(2-Ethylhexyl)phthalate	1.4	467	U	3, 4
IR86-EB01-110909-SW	bis(2-Ethylhexyl)phthalate	1.4	467	None	See FB

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD107-0-0.5-09D ug/kg	IR86-SD107D-0-0.5-09D ug/kg	RPD	Qualifier
Di-n-butylphthalate	290 U	30	NC	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/14/2009 0617	KSH	11/16/2009 2229	21821

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	UJ ~~U~~	10	0.33	ug/L	1 MSL
Atrazine	1912-24-9	8270D	10	R ~~U~~	10	0.20	ug/L	1 MSL
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	UJ ~~U~~	5.1	0.20	ug/L	1 MSL
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	~~U~~	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	~~U~~	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	~~U~~	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	~~U~~	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	R ~~U~~	5.1	0.22	ug/L	1 MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	UJ ~~U~~	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	~~U~~	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	~~U~~	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	UJ ~~U~~	1.0	0.20	ug/L	1 MSL
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	~~U~~	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	~~U~~	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	~~U~~	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	UJ ~~U~~	10	0.59	ug/L	1 MSL
2,4-Dinitrophenol	51-28-5	8270D	5.1	UJ ~~U~~	5.1	0.44	ug/L	1 MSL
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**1.4**	**J**	**5.1**	**0.11**	**ug/L**	**1** MSL
Hexachlorobenzene	118-74-1	8270D	1.0	UJ ~~U~~	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	~~U~~	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	~~U~~	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	~~U~~	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	UJ ~~U~~	1.0	0.18	ug/L	1 MSL
2-Methylphenol	95-48-7	8270D	1.0	~~U~~	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	~~U~~	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	UJ ~~U~~	2.0	0.34	ug/L	1 MSL
3-Nitroaniline	99-09-2	8270D	10	R ~~U~~	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	R ~~U~~	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	UJ ~~U~~	10	0.40	ug/L	1 MSL
4-Nitrophenol	100-02-7	8270D	5.1	UJ ~~U~~	5.1	0.43	ug/L	1 MSL
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/14/2009 0617	KSH	11/16/2009 2229	21821

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	UJ ~~U~~	5.1	0.24	ug/L	1 MSL
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	40-110
2-Fluorobiphenyl		57	50-110
Terphenyl-d14		56	50-135
2-Fluorophenol		55	20-110
Phenol-d5		47	10-115
2,4,6-Tribromophenol		53	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/14/2009 0715	KSH	11/16/2009 2229	21821

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.35	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.4	U	5.4	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.098	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.065	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.4	UJ ~~U~~	5.4	0.24	ug/L	1 BSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.4	U	5.4	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.25	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.4	U	5.4	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.4	U	5.4	0.63	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.23	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.4	U	5.4	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.42	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.4	U	5.4	0.065	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.63	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.4	U	5.4	0.47	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.27	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.41	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.097	ug/L	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	**1.4**	**J**	**5.4**	**0.12**	**ug/L**	**1**
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	UJ ~~U~~	11	0.25	ug/L	1 BSL
Hexachloroethane	67-72-1	8270D	5.4	U	5.4	0.24	ug/L	1
Isophorone	78-59-1	8270D	5.4	U	5.4	0.23	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.33	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.70	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.36	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.25	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.27	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.42	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.4	U	5.4	0.46	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.4	U	5.4	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/7/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/14/2009 0715	KSH	11/16/2009 2229	21821

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.4	U	5.4	0.26	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.4	U	5.4	0.62	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.4	U	5.4	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	40-110
2-Fluorobiphenyl		58	50-110
Terphenyl-d14		61	50-135
2-Fluorophenol		52	20-110
Phenol-d5		48	10-115
2,4,6-Tribromophenol		60	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	12/14/2009 0734	KSH	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	290 UJ	U	290	21	ug/kg	1	SSL
Atrazine	1912-24-9	8270D	290	U	290	19	ug/kg	1	
Benzaldehyde	100-52-7	8270D	290	U	290	19	ug/kg	1	
1,1'-Biphenyl	92-52-4	8270D	290	U	290	11	ug/kg	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	290	U	290	11	ug/kg	1	
Butyl benzyl phthalate	85-68-7	8270D	290	U	290	25	ug/kg	1	
Caprolactam	105-60-2	8270D	290	U	290	19	ug/kg	1	
Carbazole	86-74-8	8270D	290	U	290	16	ug/kg	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	290	U	290	9.6	ug/kg	1	
4-Chloroaniline	106-47-8	8270D	290	U	290	7.8	ug/kg	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	290	U	290	11	ug/kg	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	38	U	38	11	ug/kg	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	290	U	290	13	ug/kg	1	
2-Chloronaphthalene	91-58-7	8270D	290	U	290	13	ug/kg	1	
2-Chlorophenol	95-57-8	8270D	290	U	290	11	ug/kg	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	290	U	290	13	ug/kg	1	
Dibenzofuran	132-64-9	8270D	290	U	290	11	ug/kg	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	290	U	290	41	ug/kg	1	
2,4-Dichlorophenol	120-83-2	8270D	290	U	290	11	ug/kg	1	
Diethylphthalate	84-66-2	8270D	290	U	290	13	ug/kg	1	
Dimethyl phthalate	131-11-3	8270D	290	U	290	13	ug/kg	1	
2,4-Dimethylphenol	105-67-9	8270D	290	U	290	14	ug/kg	1	
Di-n-butyl phthalate	84-74-2	8270D	290	U	290	21	ug/kg	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	450	U	450	150	ug/kg	1	
2,4-Dinitrophenol	51-28-5	8270D	380	U	380	130	ug/kg	1	
2,4-Dinitrotoluene	121-14-2	8270D	290	U	290	21	ug/kg	1	
2,6-Dinitrotoluene	606-20-2	8270D	290	U	290	19	ug/kg	1	
Di-n-octylphthalate	117-84-0	8270D	290	U	290	37	ug/kg	1	
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	290 ~~37~~ UJ	**U**	**290**	**14**	**ug/kg**	**1**	FBL
Hexachlorobenzene	118-74-1	8270D	290 UJ	U	290	17	ug/kg	1	
Hexachlorobutadiene	87-68-3	8270D	290	U	290	13	ug/kg	1	
Hexachlorocyclopentadiene	77-47-4	8270D	290	U	290	27	ug/kg	1	
Hexachloroethane	67-72-1	8270D	290	U	290	10	ug/kg	1	
Isophorone	78-59-1	8270D	210	U	210	8.5	ug/kg	1	
2-Methylnaphthalene	91-57-6	8270D	290	U	290	11	ug/kg	1	
2-Methylphenol	95-48-7	8270D	290	U	290	6.9	ug/kg	1	
3 & 4-Methylphenol	106-44-5	8270D	77	U	77	14	ug/kg	1	
2-Nitroaniline	88-74-4	8270D	290	U	290	26	ug/kg	1	
3-Nitroaniline	99-09-2	8270D	290	U	290	45	ug/kg	1	
4-Nitroaniline	100-01-6	8270D	290	U	290	22	ug/kg	1	
Nitrobenzene	98-95-3	8270D	290	U	290	6.2	ug/kg	1	
2-Nitrophenol	88-75-5	8270D	290	U	290	21	ug/kg	1	
4-Nitrophenol	100-02-7	8270D	340	U	340	110	ug/kg	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	290	U	290	15	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/7/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005** 3
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	12/14/2009 0734	KSH	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	290 UJ	U	290	9.8	ug/kg	1 SSL
Pentachlorophenol	87-86-5	8270D	480	U	480	160	ug/kg	1
Phenol	108-95-2	8270D	290	U	290	10	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	290	U	290	11	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	290	U	290	11	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	23	35-100
2-Fluorobiphenyl	N	27	45-105
Terphenyl-d14		39	30-125
2-Fluorophenol	N	25	35-105
Phenol-d5	N	19	40-100
2,4,6-Tribromophenol		43	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	12/14/2009 0753	KSH	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	260	U	260	18	ug/kg	1
Atrazine	1912-24-9	8270D	260	U	260	17	ug/kg	1
Benzaldehyde	100-52-7	8270D	260	U	260	17	ug/kg	1
1,1'-Biphenyl	92-52-4	8270D	260	U	260	10	ug/kg	1
4-Bromophenyl phenyl ether	101-55-3	8270D	260	U	260	10	ug/kg	1
Butyl benzyl phthalate	85-68-7	8270D	260	U	260	23	ug/kg	1
Caprolactam	105-60-2	8270D	260	U	260	17	ug/kg	1
Carbazole	86-74-8	8270D	260	U	260	14	ug/kg	1
4-Chloro-3-methyl phenol	59-50-7	8270D	260	U	260	8.6	ug/kg	1
4-Chloroaniline	106-47-8	8270D	260	U	260	7.0	ug/kg	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	260	U	260	10	ug/kg	1
bis(2-Chloroethyl)ether	111-44-4	8270D	34	U	34	9.4	ug/kg	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	260	U	260	11	ug/kg	1
2-Chloronaphthalene	91-58-7	8270D	260	U	260	11	ug/kg	1
2-Chlorophenol	95-57-8	8270D	260	U	260	9.4	ug/kg	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	260	U	260	11	ug/kg	1
Dibenzofuran	132-64-9	8270D	260	U	260	10	ug/kg	1
3,3'-Dichlorobenzidine	91-94-1	8270D	260	U	260	37	ug/kg	1
2,4-Dichlorophenol	120-83-2	8270D	260	U	260	10	ug/kg	1
Diethylphthalate	84-66-2	8270D	260	U	260	11	ug/kg	1
Dimethyl phthalate	131-11-3	8270D	260	U	260	11	ug/kg	1
2,4-Dimethylphenol	105-67-9	8270D	260	U	260	12	ug/kg	1
Di-n-butyl phthalate	**84-74-2**	**8270D**	**30**	**J**	**260**	**18**	**ug/kg**	**1**
4,6-Dinitro-2-methylphenol	534-52-1	8270D	400	U	400	130	ug/kg	1
2,4-Dinitrophenol	51-28-5	8270D	340	U	340	110	ug/kg	1
2,4-Dinitrotoluene	121-14-2	8270D	260	U	260	18	ug/kg	1
2,6-Dinitrotoluene	606-20-2	8270D	260	U	260	17	ug/kg	1
Di-n-octylphthalate	117-84-0	8270D	260	U	260	33	ug/kg	1
bis(2-Ethylhexyl)phthalate	**117-81-7**	**8270D**	260 ~~30~~ U ~~J~~		**260**	**12**	**ug/kg**	**1** FBL
Hexachlorobenzene	118-74-1	8270D	260	U	260	15	ug/kg	1
Hexachlorobutadiene	87-68-3	8270D	260	U	260	11	ug/kg	1
Hexachlorocyclopentadiene	77-47-4	8270D	260	U	260	25	ug/kg	1
Hexachloroethane	67-72-1	8270D	260	U	260	9.1	ug/kg	1
Isophorone	78-59-1	8270D	180	U	180	7.6	ug/kg	1
2-Methylnaphthalene	91-57-6	8270D	260	U	260	10	ug/kg	1
2-Methylphenol	95-48-7	8270D	260	U	260	6.2	ug/kg	1
3 & 4-Methylphenol	106-44-5	8270D	69	U	69	12	ug/kg	1
2-Nitroaniline	88-74-4	8270D	260	U	260	24	ug/kg	1
3-Nitroaniline	99-09-2	8270D	260	U	260	40	ug/kg	1
4-Nitroaniline	100-01-6	8270D	260	U	260	19	ug/kg	1
Nitrobenzene	98-95-3	8270D	260	U	260	5.5	ug/kg	1
2-Nitrophenol	88-75-5	8270D	260	U	260	18	ug/kg	1
4-Nitrophenol	100-02-7	8270D	310	U	310	98	ug/kg	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	260	U	260	13	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8270D	1	12/14/2009 0753	KSH	11/18/2009 2010	21983

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	260	U	260	8.8	ug/kg	1
Pentachlorophenol	87-86-5	8270D	430	U	430	140	ug/kg	1
Phenol	108-95-2	8270D	260	U	260	9.2	ug/kg	1
2,4,5-Trichlorophenol	95-95-4	8270D	260	U	260	9.5	ug/kg	1
2,4,6-Trichlorophenol	88-06-2	8270D	260	U	260	10	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5	N	22	35-100
2-Fluorobiphenyl	N	29	45-105
Terphenyl-d14		48	30-125
2-Fluorophenol	N	26	35-105
Phenol-d5	N	26	40-100
2,4,6-Tribromophenol		54	35-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KK11042

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 7, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SW113-09D	KK11042-001	Water
2	IR86-FB01-110909	KK11042-002	Water
3	IR86-EB01-110909-SW	KK11042-003	Water
4	IR86-EB01-111009-SW	KK11042-004	Water
5	IR86-SD107-0-0.5-09D	KK11042-005	Soil
6	IR86-SD107-0-0.5-09D	KK11042-006	Soil
7	IR86-TB01-111009	KK11042-007	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recovery values.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
5	1,4-Dichlorobenzene-d4	Low	J/UJ

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01-111009	None - ND	-	-	-	-
IR86-FB01-110909	None - ND	-	-	-	-
IR86-EB01-110909-SW	None - ND	-	-	-	-
IR86-EB01-111009-SW	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD107-0-0.5-09D ug/kg	IR86-SD107D-0-0.5-09D ug/kg	RPD	Qualifier
None	-	-	-	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0446	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.24**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**0.13**	**J**	**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	**127-18-4**	**8260B**	**0.26**	**J**	**1.0**	**0.014**	**ug/L**	**1**
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SW113-09D**
Date Sampled: **11/08/2009 1710**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0446	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.19**	**J**	**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		110	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/7/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0507	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01-110909**
Date Sampled: **11/09/2009 1330**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0507	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		103	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0528	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-110909-SW**
Date Sampled: **11/09/2009 1400**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0528	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		108	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SW**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0550	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01-111009-SW**
Date Sampled: **11/10/2009 0915**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0550	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		113	70-120
Toluene-d8		111	85-120
Bromofluorobenzene		115	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/21/2009 0023	RRH		24888

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	25	U	25	2.3	ug/kg	1	
Benzene	71-43-2	8260B	6.3	U	6.3	1.4	ug/kg	1	
Bromodichloromethane	75-27-4	8260B	6.3	U	6.3	1.4	ug/kg	1	
Bromoform	75-25-2	8260B	13	U	13	0.88	ug/kg	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	13	U	13	2.3	ug/kg	1	
2-Butanone (MEK)	78-93-3	8260B	13	U	13	3.0	ug/kg	1	
Carbon disulfide	75-15-0	8260B	6.3	U	6.3	1.6	ug/kg	1	
Carbon tetrachloride	56-23-5	8260B	6.3	U	6.3	2.3	ug/kg	1	
Chlorobenzene	108-90-7	8260B	6.3	U	6.3	1.9	ug/kg	1	
Chloroethane	75-00-3	8260B	6.3	U	6.3	1.6	ug/kg	1	
Chloroform	67-66-3	8260B	6.3	U	6.3	1.0	ug/kg	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	6.3	U	6.3	1.3	ug/kg	1	
Cyclohexane	110-82-7	8260B	6.3	U	6.3	0.85	ug/kg	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	6.3	UJ ~~U~~	6.3	1.9	ug/kg	1	ISL
Dibromochloromethane	124-48-1	8260B	6.3	U	6.3	0.79	ug/kg	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	6.3	U	6.3	1.1	ug/kg	1	
1,2-Dichlorobenzene	95-50-1	8260B	6.3	UJ ~~U~~	6.3	1.2	ug/kg	1	ISL
1,3-Dichlorobenzene	541-73-1	8260B	6.3	~~U~~	6.3	1.6	ug/kg	1	↓
1,4-Dichlorobenzene	106-46-7	8260B	6.3	~~U~~	6.3	1.9	ug/kg	1	↓
Dichlorodifluoromethane	75-71-8	8260B	6.3	U	6.3	2.0	ug/kg	1	
1,1-Dichloroethane	75-34-3	8260B	6.3	U	6.3	0.92	ug/kg	1	
1,2-Dichloroethane	107-06-2	8260B	6.3	U	6.3	1.3	ug/kg	1	
1,1-Dichloroethene	75-35-4	8260B	6.3	U	6.3	2.1	ug/kg	1	
cis-1,2-Dichloroethene	156-59-2	8260B	6.3	U	6.3	0.96	ug/kg	1	
trans-1,2-Dichloroethene	156-60-5	8260B	6.3	U	6.3	1.9	ug/kg	1	
1,2-Dichloropropane	78-87-5	8260B	6.3	U	6.3	1.1	ug/kg	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	6.3	U	6.3	0.86	ug/kg	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	6.3	U	6.3	1.0	ug/kg	1	
Ethylbenzene	100-41-4	8260B	6.3	U	6.3	1.4	ug/kg	1	
2-Hexanone	591-78-6	8260B	13	U	13	1.6	ug/kg	1	
Isopropylbenzene	98-82-8	8260B	6.3	UJ ~~U~~	6.3	1.0	ug/kg	1	ISL
Methyl acetate	79-20-9	8260B	6.3	U	6.3	0.84	ug/kg	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.3	U	6.3	0.50	ug/kg	1	
4-Methyl-2-pentanone	108-10-1	8260B	13	U	13	1.9	ug/kg	1	
Methylcyclohexane	108-87-2	8260B	6.3	U	6.3	0.77	ug/kg	1	
Methylene chloride	75-09-2	8260B	6.3	U	6.3	3.3	ug/kg	1	
Styrene	100-42-5	8260B	6.3	U	6.3	1.4	ug/kg	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	6.3	UJ ~~U~~	6.3	0.59	ug/kg	1	ISL
Tetrachloroethene	127-18-4	8260B	6.3	U	6.3	2.9	ug/kg	1	
Toluene	108-88-3	8260B	6.3	U	6.3	1.8	ug/kg	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	6.3	U	6.3	2.6	ug/kg	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	6.3	UJ ~~U~~	6.3	1.3	ug/kg	1	ISL
1,1,1-Trichloroethane	71-55-6	8260B	6.3	U	6.3	1.1	ug/kg	1	
1,1,2-Trichloroethane	79-00-5	8260B	6.3	U	6.3	0.99	ug/kg	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/7/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107-0-0.5-09D**
Date Sampled: **11/10/2009 0745**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-005**
Matrix: **Solid**
% Solids: **81.2** **11/11/2009 1933**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/21/2009 0023	RRH		24888

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	6.3	U	6.3	2.4	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	6.3	U	6.3	1.9	ug/kg	1
Vinyl chloride	75-01-4	8260B	6.3	U	6.3	1.1	ug/kg	1
Xylenes (total)	1330-20-7	8260B	6.3	U	6.3	3.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		89	85-120
1,2-Dichloroethane-d4		97	53-142
Toluene-d8		105	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2206	RRH		24888

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	18	U	18	1.7	ug/kg	1
Benzene	71-43-2	8260B	4.6	U	4.6	1.0	ug/kg	1
Bromodichloromethane	75-27-4	8260B	4.6	U	4.6	1.0	ug/kg	1
Bromoform	75-25-2	8260B	9.2	U	9.2	0.65	ug/kg	1
Bromomethane (Methyl bromide)	74-83-9	8260B	9.2	U	9.2	1.7	ug/kg	1
2-Butanone (MEK)	78-93-3	8260B	9.2	U	9.2	2.2	ug/kg	1
Carbon disulfide	75-15-0	8260B	4.6	U	4.6	1.2	ug/kg	1
Carbon tetrachloride	56-23-5	8260B	4.6	U	4.6	1.7	ug/kg	1
Chlorobenzene	108-90-7	8260B	4.6	U	4.6	1.4	ug/kg	1
Chloroethane	75-00-3	8260B	4.6	U	4.6	1.2	ug/kg	1
Chloroform	67-66-3	8260B	4.6	U	4.6	0.77	ug/kg	1
Chloromethane (Methyl chloride)	74-87-3	8260B	4.6	U	4.6	0.92	ug/kg	1
Cyclohexane	110-82-7	8260B	4.6	U	4.6	0.62	ug/kg	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	4.6	U	4.6	1.4	ug/kg	1
Dibromochloromethane	124-48-1	8260B	4.6	U	4.6	0.58	ug/kg	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	4.6	U	4.6	0.78	ug/kg	1
1,2-Dichlorobenzene	95-50-1	8260B	4.6	U	4.6	0.86	ug/kg	1
1,3-Dichlorobenzene	541-73-1	8260B	4.6	U	4.6	1.2	ug/kg	1
1,4-Dichlorobenzene	106-46-7	8260B	4.6	U	4.6	1.4	ug/kg	1
Dichlorodifluoromethane	75-71-8	8260B	4.6	U	4.6	1.5	ug/kg	1
1,1-Dichloroethane	75-34-3	8260B	4.6	U	4.6	0.67	ug/kg	1
1,2-Dichloroethane	107-06-2	8260B	4.6	U	4.6	0.92	ug/kg	1
1,1-Dichloroethene	75-35-4	8260B	4.6	U	4.6	1.6	ug/kg	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.6	U	4.6	0.70	ug/kg	1
trans-1,2-Dichloroethene	156-60-5	8260B	4.6	U	4.6	1.4	ug/kg	1
1,2-Dichloropropane	78-87-5	8260B	4.6	U	4.6	0.84	ug/kg	1
cis-1,3-Dichloropropene	10061-01-5	8260B	4.6	U	4.6	0.63	ug/kg	1
trans-1,3-Dichloropropene	10061-02-6	8260B	4.6	U	4.6	0.76	ug/kg	1
Ethylbenzene	100-41-4	8260B	4.6	U	4.6	1.0	ug/kg	1
2-Hexanone	591-78-6	8260B	9.2	U	9.2	1.2	ug/kg	1
Isopropylbenzene	98-82-8	8260B	4.6	U	4.6	0.74	ug/kg	1
Methyl acetate	79-20-9	8260B	4.6	U	4.6	0.62	ug/kg	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.6	U	4.6	0.37	ug/kg	1
4-Methyl-2-pentanone	108-10-1	8260B	9.2	U	9.2	1.4	ug/kg	1
Methylcyclohexane	108-87-2	8260B	4.6	U	4.6	0.56	ug/kg	1
Methylene chloride	75-09-2	8260B	4.6	U	4.6	2.4	ug/kg	1
Styrene	100-42-5	8260B	4.6	U	4.6	1.0	ug/kg	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	4.6	U	4.6	0.43	ug/kg	1
Tetrachloroethene	127-18-4	8260B	4.6	U	4.6	2.1	ug/kg	1
Toluene	108-88-3	8260B	4.6	U	4.6	1.3	ug/kg	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	4.6	U	4.6	1.9	ug/kg	1
1,2,4-Trichlorobenzene	120-82-1	8260B	4.6	U	4.6	0.92	ug/kg	1
1,1,1-Trichloroethane	71-55-6	8260B	4.6	U	4.6	0.78	ug/kg	1
1,1,2-Trichloroethane	79-00-5	8260B	4.6	U	4.6	0.73	ug/kg	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
3/7/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-SD107D-0-0.5-09D**
Date Sampled: **11/10/2009 0750**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-006**
Matrix: **Solid**
% Solids: **85.0** **11/11/2009 1933**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5035	8260B	1	11/20/2009 2206	RRH		24888

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	4.6	U	4.6	1.8	ug/kg	1
Trichlorofluoromethane	75-69-4	8260B	4.6	U	4.6	1.4	ug/kg	1
Vinyl chloride	75-01-4	8260B	4.6	U	4.6	0.79	ug/kg	1
Xylenes (total)	1330-20-7	8260B	4.6	U	4.6	2.7	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		105	85-120
1,2-Dichloroethane-d4		99	53-142
Toluene-d8		107	85-115

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/1/10

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-111009**
Date Sampled: **11/10/2009 1000**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0217	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/7/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01-111009**
Date Sampled: **11/10/2009 1000**
Date Received: **11/11/2009**

Laboratory ID: **KK11042-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	11/21/2009 0217	DLB		22220

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL10012

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01-120709	KL10012-001	Water
2	IR86-EB01-120809	KL10012-002	Water
3	IR86-EB01-120909	KL10012-003	Water
4	IR86-FB01-120809	KL10012-004	Water
5	IR86-GW52-09D	KL10012-005	Water
6	IR86-GW47-09D	KL10012-006	Water
7	IR86-GW53-09D	KL10012-007	Water
8	IR86-GW46IW-09D	KL10012-008	Water
9	IR86-GW41-09D	KL10012-009	Water
10	SWMU318-GW08-09D	KL10012-010	Water
11	IR86-TB01120909	KL10012-011	Water
12	USTAS4105-GW02-09D	KL10012-012	Water
13	IR86-GW47IW-09D	KL10012-013	Water
13MS	IR86-GW47IW-09DMS	KL10012-013MS	Water
13MSD	IR86-GW47IW-09DMSD	KL10012-013MSD	Water
14	IR86-TB01121009	KL10012-014	Water
15	IR86-EB01121009	KL10012-015	Water
16	IR86-GW38IWA-09D	KL10012-016	Water
17	IR86-GW38IWB-09D	KL10012-017	Water
18	SWMU318-GW01-09D	KL10012-018	Water
19	SWMU318-GW01D-09D	KL10012-019	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/17/09	Methyl Acetate	34.2%	J/UJ	13, 15-19
	Acetone	36.7%		
	2-Butanone	34.6%		
	1,2-Dibromo-3-chloropropane	33.8%		
	4-Methyl-2-pentanone	29.5%		
	2-Hexanone	32.6%		
	Bromoform	31.2%		

Surrogates - All samples exhibited acceptable surrogate recovery values.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
13	Bromoform	50%/44%/Ok	None - See CCAL
	Chloroethane	148%/Ok/Ok	None - ND
	Chloromethane	141%/Ok/Ok	None - ND
	Cyclohexane	132%/Ok/Ok	None - ND
	1,2-Dibromo-3-chloropropane	44%/41%/Ok	None - See CCAL
	1,2-Dibromoethane	72%/63%/Ok	J/UJ
	1,1-Dichloroethene	140%/Ok/Ok	None - ND
	2-Hexanone	49%/43%/Ok	None - See CCAL
	4-Methyl-2-pentanone	52%/46%/Ok	None - See CCAL
	Styrene	46%/34%/Ok	J/UJ
	1,1,2,2-Tetrachloroethane	63%/55%/Ok	J/UJ
	1,1,2-Trichloroethane	Ok/68%/Ok	J/UJ
	1,1,1-Trichloroethane	138%/Ok/Ok	None - ND
	Vinyl Chloride	155%/Ok/Ok	None - ND
	Xylenes	Ok/78%/Ok	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01-01120909	None - ND	-	-	-	-
IR86-TB01-01121009	None - ND	-	-	-	-
IR86-EB01-120709	Chloromethane	0.25	1.25	None	All ND
IR86-EB01-120809	Chloromethane	1.6	8.0	None	All ND
IR86-EB01-120909	Chloromethane	1.6	8.0	None	All ND
IR86-EB01121009	Chloroform	1.6	8.0	None	All ND
	Chloromethane	0.19	0.95	U	19
IR86-FB01-120809	Chloroform	1.6	8.0	None	All ND

Field Duplicates - Field duplicate results are summarized below.

Compound	SWMU318-GW01-09D ug/L	SWMU318-GW01D-09D ug/L	RPD	Qualifier
1,1-Dichloroethane	0.40	0.37	8%	None
cis-1,2-Dichloroethene	0.24	0.21	13%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120709
Date Sampled: 12/07/2009 1500
Date Received: 12/10/2009

Laboratory ID: KL10012-001
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0147	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.4		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120709
Date Sampled: 12/07/2009 1500
Date Received: 12/10/2009

Laboratory ID: KL10012-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0147	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-120
Toluene-d8		92	85-120
Bromofluorobenzene		84	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

kw
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120809
Date Sampled: 12/08/2009 1700
Date Received: 12/10/2009

Laboratory ID: KL10012-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0208	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.4		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	0.18	J	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120809
Date Sampled: 12/08/2009 1700
Date Received: 12/10/2009

Laboratory ID: KL10012-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0208	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		86	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120909
Date Sampled: 12/09/2009 1400
Date Received: 12/10/2009

Laboratory ID: KL10012-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0229	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.6		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01-120909
Date Sampled: 12/09/2009 1400
Date Received: 12/10/2009

Laboratory ID: KL10012-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0229	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120
Toluene-d8		110	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-FB01-120809
Date Sampled: 12/08/2009 1710
Date Received: 12/10/2009

Laboratory ID: KL10012-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0251	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.6		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-FB01-120809
Date Sampled: 12/08/2009 1710
Date Received: 12/10/2009

Laboratory ID: KL10012-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0251	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-120
Toluene-d8		108	85-120
Bromofluorobenzene		96	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW52-09D
Date Sampled: 12/09/2009 1100
Date Received: 12/10/2009

Laboratory ID: KL10012-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0312	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	11		1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	0.30	J	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.22	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	4.6		1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	0.46	J	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	5.1		1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW52-09D
Date Sampled: 12/09/2009 1100
Date Received: 12/10/2009

Laboratory ID: KL10012-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0312	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	6.8		0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW47-09D
Date Sampled: 12/09/2009 1100
Date Received: 12/10/2009

Laboratory ID: KL10012-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0333	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	9.6		1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	8.0		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.36	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.70	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	4.1	J	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW47-09D
Date Sampled: 12/09/2009 1100
Date Received: 12/10/2009

Laboratory ID: KL10012-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0333	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	8.0		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW53-09D
Date Sampled: 12/08/2009 1525
Date Received: 12/10/2009

Laboratory ID: KL10012-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0355	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.20	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW53-09D
Date Sampled: 12/08/2009 1525
Date Received: 12/10/2009

Laboratory ID: KL10012-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0355	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW46IW-09D
Date Sampled: 12/07/2009 1530
Date Received: 12/10/2009

Laboratory ID: KL10012-008
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0416	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	0.41	J	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW46IW-09D
Date Sampled: 12/07/2009 1530
Date Received: 12/10/2009

Laboratory ID: KL10012-008
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0416	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		84	70-120
Toluene-d8		88	85-120
Bromofluorobenzene		82	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW41-09D
Date Sampled: 12/07/2009 1635
Date Received: 12/10/2009

Laboratory ID: KL10012-009
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0437	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	0.34	J	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.8		1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.52	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	0.63	J	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	4.2		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	28		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW41-09D
Date Sampled: 12/07/2009 1635
Date Received: 12/10/2009

Laboratory ID: KL10012-009
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0437	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	3.3		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-120
Toluene-d8		89	85-120
Bromofluorobenzene		81	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

RW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: SWMU318-GW08-09D
Date Sampled: 12/08/2009 1415
Date Received: 12/10/2009

Laboratory ID: KL10012-010
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0458	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.9		1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.42	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	0.27	J	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.5		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: SWMU318-GW08-09D
Date Sampled: 12/08/2009 1415
Date Received: 12/10/2009

Laboratory ID: KL10012-010
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0458	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.79		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		89	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/17/10

Client: CH2M HILL, Inc.
Description: IR86-TB01120909
Date Sampled: 12/09/2009 1500
Date Received: 12/10/2009

Laboratory ID: KL10012-011
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0519	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-TB01120909
Date Sampled: 12/09/2009 1500
Date Received: 12/10/2009

Laboratory ID: KL10012-011
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0519	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		91	70-120
Toluene-d8		109	85-120
Bromofluorobenzene		98	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

JLW
3/17/10

Client: CH2M HILL, Inc.
Description: USTAS4105-GW02-09D
Date Sampled: 12/09/2009 1405
Date Received: 12/10/2009

Laboratory ID: KL10012-012
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0540	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	0.38	J	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	0.19	J	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: USTAS4105-GW02-09D
Date Sampled: 12/09/2009 1405
Date Received: 12/10/2009

Laboratory ID: KL10012-012
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0540	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		90	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

ew
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW47IW-09D
Date Sampled: 12/09/2009 1520
Date Received: 12/11/2009

Laboratory ID: KL10012-013
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/17/2009 1459	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	2 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	2 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	2 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	2 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UJ ~~U~~	0.50	0.061	ug/L	2 MSL
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	2 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	2 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	2 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UJ ~~U~~	1.0	0.015	ug/L	2 MSL
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UJ ~~U~~	0.50	0.013	ug/L	2 MSL
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UJ ~~U~~	1.0	0.031	ug/L	2 MSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW47IW-09D
Date Sampled: 12/09/2009 1520
Date Received: 12/11/2009

Laboratory ID: KL10012-013
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/17/2009 1459	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	~~UJ~~	0.50	0.17	ug/L	2 MSL

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-120
Toluene-d8		100	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

kw
3/17/10

Client: CH2M HILL, Inc.
Description: IR86-TB01121009
Date Sampled: 12/10/2009 0900
Date Received: 12/11/2009

Laboratory ID: KL10012-014
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0623	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

lw 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-TB01121009
Date Sampled: 12/10/2009 0900
Date Received: 12/11/2009

Laboratory ID: KL10012-014
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 0623	DLB		23854

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		89	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121009
Date Sampled: 12/10/2009 1000
Date Received: 12/11/2009

Laboratory ID: KL10012-015
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1521	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.6		1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	0.19	J	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121009
Date Sampled: 12/10/2009 1000
Date Received: 12/11/2009

Laboratory ID: KL10012-015
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1521	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-120
Toluene-d8		109	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW38IWA-09D
Date Sampled: 12/10/2009 0900
Date Received: 12/11/2009

Laboratory ID: KL10012-016
Matrix: Aqueous

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1542	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	0.22	J	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.57	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW38IWA-09D
Date Sampled: 12/10/2009 0900
Date Received: 12/11/2009

Laboratory ID: KL10012-016
Matrix: Aqueous

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1542	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	1.3		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		89	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

uw
3/17/10

Client: CH2M HILL, Inc.
Description: IR86-GW38IWB-09D
Date Sampled: 12/10/2009 1200
Date Received: 12/11/2009

Laboratory ID: KL10012-017
Matrix: Aqueous

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1604	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.5		1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	0.66	J	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	66		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	0.75	J	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW38IWB-09D
Date Sampled: 12/10/2009 1200
Date Received: 12/11/2009

Laboratory ID: KL10012-017
Matrix: Aqueous

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1604	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	2.7		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.52		0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		89	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw 3/17/10

Client: CH2M HILL, Inc.
Description: SWMU318-GW01-09D
Date Sampled: 12/10/2009 1125
Date Received: 12/11/2009

Laboratory ID: KL10012-018
Matrix: Aqueous

18

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1625	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.40	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.24	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: SWMU318-GW01-09D
Date Sampled: 12/10/2009 1125
Date Received: 12/11/2009

Laboratory ID: KL10012-018
Matrix: Aqueous

18

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1625	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: SWMU318-GW01D-09D
Date Sampled: 12/10/2009 1130
Date Received: 12/11/2009

Laboratory ID: KL10012-019
Matrix: Aqueous

19

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1646	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0U ~~0.24~~	J	1.0	0.17	ug/L	1 EBL
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	0.37	J	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.21	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: SWMU318-GW01D-09D
Date Sampled: 12/10/2009 1130
Date Received: 12/11/2009

Laboratory ID: KL10012-019
Matrix: Aqueous

19

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1646	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		85	70-120
Toluene-d8		105	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

ew
3/17/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL13002

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59IW-09D	KL13002-008	Water
1MS	IR86-GW59IW-09DMS	KL13002-008MS	Water
1MSD	IR86-GW59IW-09DMSD	KL13002-008MSD	Water
2	IR86-GW59-09D	KL13002-010	Water
3	IR86-EB01121209	KL13002-012	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Arsenic	0.0046	0.023	None	All ND
Beryllium	0.0013	0.0065	None	All ND
Chromium	0.0026	0.0130	U	1
Copper	0.0023	0.0115	None	All ND
Iron	0.043	0.2150	U	3

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01121209	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1619	KJC	12/18/2009 1630	23886
2	3005A	6010C	1	12/31/2009 1253	CDF	12/18/2009 1630	23886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.34**		**0.20**	**0.060**	**mg/L**	**1**
Antimony	**7440-36-0**	**6010C**	**0.0032**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.021**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**69**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	**7440-47-3**	**6010C**	0.012 ~~0.012~~	U ~~B~~	**0.0050**	**0.0016**	**mg/L**	**1** MBL
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**1.3**	~~B~~	**0.10**	**0.030**	**mg/L**	**1**
Lead	**7439-92-1**	**6010C**	**0.0045**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	**7439-96-5**	**6010C**	**0.028**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**6.8**		**5.0**	**1.6**	**mg/L**	**2**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**17**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	**7440-66-6**	**6010C**	**0.018**	**J**	**0.020**	**0.0060**	**mg/L**	**1**

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
3/17/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1645	KJC	12/18/2009 1630	23886
2	3005A	6010C	1	12/31/2009 1316	CDF	12/18/2009 1630	23886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.014**	**J**	**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**140**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**4.4**	**~~B~~**	**0.10**	**0.030**	**mg/L**	**1**
Lead	**7439-92-1**	**6010C**	**0.0041**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Magnesium	**7439-95-4**	**6010C**	**3.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.072**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**1.6**	**J**	**5.0**	**1.6**	**mg/L**	**2**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	**7440-22-4**	**6010C**	**0.0017**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Sodium	**7440-23-5**	**6010C**	**14**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

UW 3/17/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1657	KJC	12/18/2009 1630	23886
2	3005A	6010C	1	12/31/2009 1323	CDF	12/18/2009 1630	23886

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	0.10 ~~0.098~~	U ~~B~~	**0.10**	**0.030**	**mg/L**	**1** MBL
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	2
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL13002

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59IW-09D	KL13002-008	Water
1MS	IR86-GW59IW-09DMS	KL13002-008MS	Water
1MSD	IR86-GW59IW-09DMSD	KL13002-008MSD	Water
2	IR86-GW59-09D	KL13002-010	Water
3	IR86-EB01121209	KL13002-012	Water
4	IR86-GW61IW-09D	KL13002-014	Water
5	IR86-GW61-09D	KL13002-015	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Acenaphthene	29%/29%/Ok	J/UJ
	Acenaphthylene	23%/Ok/25	J/UJ
	Anthracene	25%/28%/Ok	J/UJ
	Benzo(a)pyrene	Ok/29%/66	J/UJ
	Benzo(b)fluoranthene	Ok/Ok/100	None for RPD Alone
	Benzo(g,h,i)perylene	Ok/Ok/83	
	Benzo(k)fluoranthene	Ok/26%/110	J/UJ
	Dibenzo(a,h)anthracene	Ok/Ok/110	None for RPD Alone
	Fluoranthene	21%/27%/23	J/UJ
	Fluorene	Ok/29%/Ok	J/UJ
	Indeno(1,2,3-cd)pyrene	Ok/Ok/89	None for RPD Alone
	Pyrene	24%/Ok/23	J/UJ

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS5-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01121209	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/23/2009 2203	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	UJ U	0.20	0.021	ug/L	1 MSL
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	UJ U	0.20	0.020	ug/L	1 MSL
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	UJ U	0.20	0.024	ug/L	1 MSL
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	UJ U	0.20	0.018	ug/L	1 MSL
Fluorene	86-73-7	8270D (SIM)	0.20	UJ U	0.20	0.022	ug/L	1 MSL
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	UJ U	0.20	0.017	ug/L	1 MSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		59	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3520C	8270D (SIM)	1	01/17/2010 1050	GLR	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	2
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	2
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.016	ug/L	2
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	2
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	R ✓	0.21	0.021	ug/L	2 ISL
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	R ✓	0.21	0.020	ug/L	2 ↓
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	R ✓	0.21	0.064	ug/L	2
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	R ✓	0.21	0.025	ug/L	2
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	2
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	R ✓	0.21	0.041	ug/L	2 ISL
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	2
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	2
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	R ✓	0.21	0.052	ug/L	2 ISL
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	2
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	2
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		75	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/24/2009 0012	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		57	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/24/2009 0047	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.053	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		62	20-150
Fluoranthene-d10		58	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3520C	8270D (SIM)	1	01/04/2010 1817	GLR	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	2
Acenaphthylene	**208-96-8**	**8270D (SIM)**	**0.26**		**0.21**	**0.025**	**ug/L**	**2**
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	2
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	2
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	2
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	2
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	2
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	2
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	2
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	2
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	2
Fluorene	**86-73-7**	**8270D (SIM)**	**0.12**	**J**	**0.21**	**0.023**	**ug/L**	**2**
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.053	ug/L	2
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	2
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	2
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		76	20-150
Fluoranthene-d10		90	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL13002

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59IW-09D	KL13002-008	Water
1RE	IR86-GW59IW-09DRE	KL13002-008RE	Water
2	IR86-GW59-09D	KL13002-010	Water
2RE	IR86-GW59-09DRE	KL13002-010RE	Water
3	IR86-EB01121209	KL13002-012	Water
3MS*	IR86-EB01121209MS	KL13002-012MS	Water
3MSD*	IR86-EB01121209MSD	KL13002-012MSD	Water
3RE	IR86-EB01121209RE	KL13002-012RE	Water
4	IR86-GW61IW-09D	KL13002-014	Water
4RE	IR86-GW61IW-09DRE	KL13002-014RE	Water
5	IR86-GW61-09D	KL13002-015	Water
5MS**	IR86-GW61-09DMS	KL13002-015MS	Water
5MSD**	IR86-GW61-09DMSD	KL13002-015MSD	Water
5RE	IR86-GW61-09DRE	KL13002-015RE	Water

* - Pesticides ** - PCBs

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1RE	12/12/09	12/27/09	15	J/UJ
2RE	12/12/09	12/27/09	15	J/UJ
3RE	12/12/09	12/27/09	15	J/UJ
4RE	12/12/09	12/27/09	15	J/UJ
5RE	12/12/09	12/27/09	15	J/UJ

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Pesticides			
Sample ID	Surrogate	%R	Qualifier
3	DCB	16%	J/UJ
4	DCB	16%	J/UJ
5	DCB	27%	J/UJ

PCBs			
Sample ID	Surrogate	%R	Qualifier
3	DCB	17%	J/UJ
3RE	DCB	15%	None - See HT
4	DCB	17%	J/UJ
5	DCB	30%	J/UJ
5RE	DCB	37%	None - See HT

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
5 (PCB)	Aroclor-1260	Ok/133%/Ok	None - ND

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121209	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All criteria were met.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0209	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0038	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0050	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0080	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0060	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0050	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		79	30-135	H	79	30-135
Tetrachloro-m-xylene		93	25-140	H	89	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

1RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0209	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0038	ASB	12/27/2009 1200	24280

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	UJ UH	0.025	0.0020	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.025	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.025	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.025	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.025	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.025	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.025	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.025	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.025	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.025	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.025	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.025	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.25	UH	0.25	0.030	ug/L	2

excel

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0225	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0054	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.027	U	0.027	0.0022	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.027	U	0.027	0.0054	ug/L	1
alpha-BHC	319-84-6	8081B	0.027	U	0.027	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.027	U	0.027	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.027	U	0.027	0.0086	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.027	U	0.027	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.027	U	0.027	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.027	U	0.027	0.0065	ug/L	1
4,4'-DDE	72-55-9	8081B	0.027	U	0.027	0.0065	ug/L	1
4,4'-DDT	50-29-3	8081B	0.027	U	0.027	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.027	U	0.027	0.0043	ug/L	1
Endosulfan I	959-98-8	8081B	0.027	U	0.027	0.0065	ug/L	1
Endosulfan II	33213-65-9	8081B	0.027	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.027	U	0.027	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.027	U	0.027	0.0054	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.027	U	0.027	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.027	U	0.027	0.0043	ug/L	1
Heptachlor	76-44-8	8081B	0.027	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.027	U	0.027	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.27	U	0.27	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		51	30-135	H	51	30-135
Tetrachloro-m-xylene		96	25-140	H	89	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0225	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0054	ASB	12/27/2009 1200	24280

use only 2nd results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.028	UJ UH	0.028	0.0022	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.028	UH	0.028	0.0056	ug/L	2
alpha-BHC	319-84-6	8081B	0.028	UH	0.028	0.0033	ug/L	2
beta-BHC	319-85-7	8081B	0.028	UH	0.028	0.021	ug/L	2
delta-BHC	319-86-8	8081B	0.028	UH	0.028	0.0089	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.028	UH	0.028	0.0033	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.028	UH	0.028	0.0033	ug/L	2
4,4'-DDD	72-54-8	8081B	0.028	UH	0.028	0.0067	ug/L	2
4,4'-DDE	72-55-9	8081B	0.028	UH	0.028	0.0067	ug/L	2
4,4'-DDT	50-29-3	8081B	0.028	UH	0.028	0.0033	ug/L	2
Dieldrin	60-57-1	8081B	0.028	UH	0.028	0.0044	ug/L	2
Endosulfan I	959-98-8	8081B	0.028	UH	0.028	0.0067	ug/L	2
Endosulfan II	33213-65-9	8081B	0.028	UH	0.028	0.027	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.028	UH	0.028	0.0033	ug/L	2
Endrin	72-20-8	8081B	0.028	UH	0.028	0.0056	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.028	UH	0.028	0.0033	ug/L	2
Endrin ketone	53494-70-5	8081B	0.028	UH	0.028	0.0044	ug/L	2
Heptachlor	76-44-8	8081B	0.028	UH	0.028	0.022	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.028	UH	0.028	0.0033	ug/L	2
Methoxychlor	72-43-5	8081B	0.11	UH	0.11	0.016	ug/L	2
Toxaphene	8001-35-2	8081B	0.28	UH	0.28	0.033	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0241	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0109	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UJ U	0.026	0.0021	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	16	30-135	HN	13	30-135
Tetrachloro-m-xylene		105	25-140	H	90	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0241	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0109	ASB	12/27/2009 1200	24280

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026 UJ	UH	0.026	0.0021	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.026	UH	0.026	0.0052	ug/L	2
alpha-BHC	319-84-6	8081B	0.026	UH	0.026	0.0031	ug/L	2
beta-BHC	319-85-7	8081B	0.026	UH	0.026	0.020	ug/L	2
delta-BHC	319-86-8	8081B	0.026	UH	0.026	0.0082	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.026	UH	0.026	0.0031	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.026	UH	0.026	0.0031	ug/L	2
4,4'-DDD	72-54-8	8081B	0.026	UH	0.026	0.0062	ug/L	2
4,4'-DDE	72-55-9	8081B	0.026	UH	0.026	0.0062	ug/L	2
4,4'-DDT	50-29-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Dieldrin	60-57-1	8081B	0.026	UH	0.026	0.0041	ug/L	2
Endosulfan I	959-98-8	8081B	0.026	UH	0.026	0.0062	ug/L	2
Endosulfan II	33213-65-9	8081B	0.026	UH	0.026	0.025	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin	72-20-8	8081B	0.026	UH	0.026	0.0052	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin ketone	53494-70-5	8081B	0.026	UH	0.026	0.0041	ug/L	2
Heptachlor	76-44-8	8081B	0.026	UH	0.026	0.021	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.26	UH	0.26	0.031	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0327	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0125	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026 UJ	U	0.026	0.0020	ug/L	1 SSC
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	16	30-135	H	40	30-135
Tetrachloro-m-xylene		96	25-140	H	89	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0327	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0125	ASB	12/27/2009 1200	24280

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	UJ UH	0.025	0.0020	ug/L	2 HIT
gamma-BHC (Lindane)	58-89-9	8081B	0.025	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.025	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.025	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.025	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.025	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.025	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.025	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.025	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.025	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.025	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.025	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.25	UH	0.25	0.030	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/1/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0414	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0141	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UJ U	0.026	0.0021	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	27	30-135	H	31	30-135
Tetrachloro-m-xylene		81	25-140	H	85	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

- SRE

Use orig. NM results

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0414	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0141	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	UJ UH	0.025	0.0020	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.025	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.025	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.025	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.025	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.025	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.025	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.025	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.025	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.025	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.025	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.025	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.25	UH	0.25	0.030	ug/L	2

Exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**

Description: **IR86-GW59IW-09D**

Date Sampled: **12/12/2009 1640**

Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**

Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2314	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2051	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.050	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.60	U	0.60	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.50	U	0.50	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.50	U	0.50	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.060	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Client: **CH2M HILL, Inc.**

Description: **IR86-GW59IW-09D**

Date Sampled: **12/12/2009 1640**

Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**

Matrix: **Aqueous**

IRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2314	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2051	NCM	12/27/2009 1200	24281

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	UH	0.25	0.051	ug/L	2
Aroclor 1221	11104-28-2	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.61	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.51	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.51	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.25	UH	0.25	0.061	ug/L	2

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		91	40-135	H	99	40-135
Tetrachloro-m-xylene		113	44-130	H	110	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2327	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2103	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.27	U	0.27	0.054	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.54	U	0.54	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.65	U	0.65	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.54	U	0.54	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.54	U	0.54	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.54	U	0.54	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.27	U	0.27	0.065	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2RE

use original results

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2327	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2103	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.28	UJ UH	0.28	0.056	ug/L	2
Aroclor 1221	11104-28-2	8082A	0.56	UH	0.56	0.16	ug/L	2 HT
Aroclor 1232	11141-16-5	8082A	0.67	UH	0.67	0.22	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.56	UH	0.56	0.16	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.56	UH	0.56	0.17	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.56	UH	0.56	0.12	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.28	UH	0.28	0.067	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		54	40-135	H	63	40-135
Tetrachloro-m-xylene		106	44-130	H	111	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

aw 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2340	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2116	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26 UJ	~~U~~	0.26	0.052	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.52	~~U~~	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	~~U~~	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	~~U~~	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	~~U~~	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	~~U~~	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2340	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2116	NCM	12/27/2009 1200	24281

Use original result

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	UJ UH	0.26	0.052	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.52	UH	0.52	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.62	UH	0.62	0.21	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.52	UH	0.52	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.52	UH	0.52	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.52	UH	0.52	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.26	UH	0.26	0.062	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	17	40-135	HN	15	40-135
Tetrachloro-m-xylene		117	44-130	H	110	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

WW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2353	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2128	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	~~U~~ UJ	0.26	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW 3/17/10

Client: **CH2M HILL, Inc.**

Description: **IR86-GW61IW-09D**

Date Sampled: **12/12/2009 1240**

Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**

Matrix: **Aqueous**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/21/2009 2353	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2128	NCM	12/27/2009 1200	24281

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25 UJ	UH	0.25	0.051	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.61	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.51	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.51	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.25	UH	0.25	0.061	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	17	40-135	H	50	40-135
Tetrachloro-m-xylene		109	44-130	H	115	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0005	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2141	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

W SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

SRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0005	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2141	NCM	12/27/2009 1200	24281

USE original result

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	UJ UH	0.25	0.051	ug/L	2
Aroclor 1221	11104-28-2	8082A	0.51	UH	0.51	0.14	ug/L	2 HT
Aroclor 1232	11141-16-5	8082A	0.61	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.51	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.51	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.25	UH	0.25	0.061	ug/L	2

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	30	40-135	HN	37	40-135
Tetrachloro-m-xylene		97	44-130	H	106	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew 3/17/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL13002

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59IW-09D	KL13002-008	Water
2	IR86-GW59-09D	KL13002-010	Water
2MS	IR86-GW59-09DMS	KL13002-010MS	Water
2MSD	IR86-GW59-09DMSD	KL13002-010MSD	Water
3	IR86-EB01121209	KL13002-012	Water
4	IR86-GW61IW-09D	KL13002-014	Water
5	IR86-GW61-09D	KL13002-015	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
1	2-Fluorobiphenyl	48%	J/UJ - B/N Compounds
	Terphenyl-d14	46%	

Sample ID	Surrogate	%R	Qualifier
2	2-Fluorobiphenyl	46%	J/UJ - B/N Compounds
	Terphenyl-d14	37%	
3	2-Fluorobiphenyl	42%	J/UJ - B/N Compounds
	Terphenyl-d14	42%	
4	Terphenyl-d14	45%	None for 1 out

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
2	Benzaldehyde	Ok/Ok/26	None for RPD Alone
	4-Chloroaniline	9.6%/Ok/Ok	J/R
	4,6-Dinitro-2-methylphenol	24%/28%/Ok	J/UJ
	2,4-Dinitrophenol	7.8%/8.2%/Ok	J/R
	Hexachlorobutadiene	Ok/Ok/49	None for RPD Alone
	Hexachlorocyclopentadiene	21%/13%/50	None - See Surrogates
	Hexachloroethane	Ok/Ok/47	Nonr for RPD Alone

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01121209	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2018	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10 UJ	U	10	0.33	ug/L	1 SSL
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1 UJ	U	5.1	0.22	ug/L	1 SSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1 UJ	U	5.1	0.20	ug/L	1 SSL
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0 UJ	U	1.0	0.14	ug/L	1 SSL
Dimethyl phthalate	131-11-3	8270D	5.1 UJ	U	5.1	0.11	ug/L	1 SSL
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1 UJ	U	5.1	0.061	ug/L	1 SSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0 UJ	U	2.0	0.26	ug/L	1 SSL
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0 UJ	U	2.0	0.34	ug/L	1 SSL
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1 UJ	U	5.1	0.20	ug/L	1 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MJ 3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-008**
Matrix: **Aqueous**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2018	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	~~U~~ J	5.1	0.24	ug/L	1 SSL
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	40-110
2-Fluorobiphenyl	N	48	50-110
Terphenyl-d14	N	46	50-135
2-Fluorophenol		45	20-110
Phenol-d5		43	10-115
2,4,6-Tribromophenol		49	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2038	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10 UJ	U	10	0.33	ug/L	1 SSL
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.093	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.062	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2 R	U	5.2	0.23	ug/L	1 MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2 UJ	U	5.2	0.19	ug/L	1 SSL
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2 UJ	U	5.2	0.21	ug/L	1 SSL
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0 UJ	U	1.0	0.14	ug/L	1 SSL
Dimethyl phthalate	131-11-3	8270D	5.2 UJ	U	5.2	0.11	ug/L	1 SSL
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2 UJ	U	5.2	0.062	ug/L	1 SSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10 UJ	U	10	0.60	ug/L	1 MSL
2,4-Dinitrophenol	51-28-5	8270D	5.2 R	U	5.2	0.44	ug/L	1 MSL
2,4-Dinitrotoluene	121-14-2	8270D	2.1 UJ	U	2.1	0.26	ug/L	1 SSL
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.092	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.66	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1 UJ	U	2.1	0.34	ug/L	1 SSL
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2 UJ	U	5.2	0.21	ug/L	1 SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2038	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	UJ ~~U~~	5.2	0.25	ug/L	1 SSL
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		49	40-110
2-Fluorobiphenyl	N	46	50-110
Terphenyl-d14	N	37	50-135
2-Fluorophenol		46	20-110
Phenol-d5		42	10-115
2,4,6-Tribromophenol		43	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2139	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10 UJ	U	10	0.33	ug/L	1	SSL
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1	
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1	
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.15	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.094	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.3	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.063	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.2 UJ	U	5.2	0.23	ug/L	1	SSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2 UJ	U	5.2	0.21	ug/L	1	SSL
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0 UJ	U	1.0	0.15	ug/L	1	SSL
Dimethyl phthalate	131-11-3	8270D	5.2 UJ	U	5.2	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.41	ug/L	1	
Di-n-butyl phthalate	84-74-2	8270D	5.2 UJ	U	5.2	0.063	ug/L	1	SSL
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.45	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.1 UJ	U	2.1	0.26	ug/L	1	SSL
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.40	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.093	ug/L	1	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1	
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1	
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.13	ug/L	1	
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1	
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1	
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1	
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.1 UJ	U	2.1	0.34	ug/L	1	SSL
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1	
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1	
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	U	10	0.41	ug/L	1	
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.44	ug/L	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2 UJ	U	5.2	0.21	ug/L	1	SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-012**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2139	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	UJ ~~U~~	5.2	0.25	ug/L	1 SSL
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		42	40-110
2-Fluorobiphenyl	N	42	50-110
Terphenyl-d14	N	42	50-135
2-Fluorophenol		40	20-110
Phenol-d5		35	10-115
2,4,6-Tribromophenol		41	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2159	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.095	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	U	5.3	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.61	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.61	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.094	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-014**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 2159	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.60	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	40-110
2-Fluorobiphenyl		54	50-110
Terphenyl-d14	N	45	50-135
2-Fluorophenol		53	20-110
Phenol-d5		48	10-115
2,4,6-Tribromophenol		52	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lcw
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1349	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.095	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	U	5.3	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.61	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.61	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.094	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/15/2009**

Laboratory ID: **KL13002-015**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1349	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.60	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		71	40-110
2-Fluorobiphenyl		76	50-110
Terphenyl-d14		71	50-135
2-Fluorophenol		63	20-110
Phenol-d5		63	10-115
2,4,6-Tribromophenol		83	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL13002

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW30IW-09D	KL13002-001	Water
2	IR86-GW17IW-09D	KL13002-002	Water
3	IR86-GW38IWC-09D	KL13002-003	Water
4	IR86-EB01121109	KL13002-004	Water
5	IR86-TB01121109	KL13002-005	Water
6	IR86-GW27IW-09D	KL13002-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/17/09	Methyl Acetate	34.2%	J/UJ	All Samples
	Acetone	36.7%		
	2-Butanone	34.6%		
	1,2-Dibromo-3-chloropropane	33.8%		
	4-Methyl-2-pentanone	29.5%		
	2-Hexanone	32.6%		
	Bromoform	31.2%		

Surrogates - All samples exhibited acceptable surrogate recovery values.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01121109	None - ND	-	-	-	-
IR86-EB01121109	Chloroform	1.5	7.5	None	All ND
	Chloromethane	0.41	2.05	U	1, 3
IR86-FB01-120809	Chloroform	1.6	8.0	None	All ND

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-GW30IW-09D**
Date Sampled: **12/11/2009 1120**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-001**
Matrix: **Aqueous**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1707	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	**71-43-2**	**8260B**	**1.1**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**1.0U ~~0.22~~**	**~~J~~**	**1.0**	**0.17**	**ug/L**	**1 EBL**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.85**	**J**	**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**150**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**4.2**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW30IW-09D**
Date Sampled: **12/11/2009 1120**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1707	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**1.1**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**1.6**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW17IW-09D**
Date Sampled: **12/11/2009 1215**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1729	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.23**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW17IW-09D**
Date Sampled: **12/11/2009 1215**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1729	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW38IWC-09D**
Date Sampled: **12/10/2009 1610**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1750	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	1.04 ~~0.26~~	~~J~~	**1.0**	**0.17**	**ug/L**	**1** EBL
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**1.5**		**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.45**	**J**	**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**64**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**10**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.24**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW38IWC-09D**
Date Sampled: **12/10/2009 1610**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1750	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**3.1**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**0.40**	**J**	**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

nw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121109**
Date Sampled: **12/11/2009 1300**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1811	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~B~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~V~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~V~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**1.5**		**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.41**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~V~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~V~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~V~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~V~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121109**
Date Sampled: **12/11/2009 1300**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1811	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		79	70-120
Toluene-d8		108	85-120
Bromofluorobenzene		95	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01121109**
Date Sampled: **12/11/2009 1540**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1832	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01121109**
Date Sampled: **12/11/2009 1540**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1832	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		89	70-120
Toluene-d8		118	85-120
Bromofluorobenzene		104	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW27IW-09D**
Date Sampled: **12/10/2009 1458**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1853	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	UJ ~~U~~	10	3.3	ug/L	1 CCH
Benzene	**71-43-2**	**8260B**	**0.75**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	UJ ~~U~~	10	2.0	ug/L	1 CCH
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	**110-82-7**	**8260B**	**32**		**1.0**	**0.30**	**ug/L**	**1**
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	**75-71-8**	**8260B**	**1.4**		**1.0**	**0.071**	**ug/L**	**1**
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.19**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.60**	**J**	**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**15**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**0.22**	**J**	**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UJ ~~U~~	5.0	0.31	ug/L	1 CCH
Methylcyclohexane	**108-87-2**	**8260B**	**2.6**	**J**	**5.0**	**0.95**	**ug/L**	**1**
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	**76-13-1**	**8260B**	**1.5**		**1.0**	**0.30**	**ug/L**	**1**
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW27IW-09D**
Date Sampled: **12/10/2009 1458**
Date Received: **12/12/2009**

Laboratory ID: **KL13002-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/17/2009 1853	DLB		23861

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**13**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**1.1**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		71	70-120
Toluene-d8		97	85-120
Bromofluorobenzene		85	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/1/2010

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL16031

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01121409	KL16031-002	Water
2	IR86-GW62D-09D	KL16031-004	Water
3	IR86-GW62-09D	KL16031-015	Water
3MS	IR86-GW62-09DMS	KL16031-015MS	Water
3MSD	IR86-GW62-09DMSD	KL16031-015MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Iron	0.065	0.325	U	1

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-EB01121409	Chromium	0.0016	0.0080	U	2
	Selenium	0.0039	0.0195	None	All ND
IR86-FB01121509	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW62-09D ug/L	IR86-GW62D-09D ug/L	RPD	Qualifier
Aluminum	0.070	0.15	73%	J
Arsenic	0.0034	0.010 U	NC	None
Barium	0.071	0.067	6%	None
Calcium	110	110	0%	None
Iron	8.4	8.3	1%	None
Lead	0.010 U	0.0034	NC	None
Magnesium	4.6	4.5	2%	None
Manganese	0.16	0.16	0%	None
Potassium	2.2	2.5	13%	None
Sodium	17	16	6%	None

Compound Quantitation - No discrepancies were identified.

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1742	KJC	12/21/2009 1900	24048
2	3005A	6010C	1	12/31/2009 1017	CDF	12/21/2009 1900	24048

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	**7440-47-3**	**6010C**	**0.0016**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	0.10 ~~0.037~~	U ~~BJ~~	**0.10**	**0.030**	**mg/L**	**1** MBL
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	2
Selenium	**7782-49-2**	**6010C**	**0.0039**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

3/17/10

TAL Metals

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1746	KJC	12/21/2009 1900	24048
2	3005A	6010C	1	12/31/2009 1021	CDF	12/21/2009 1900	24048

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	**7429-90-5**	**6010C**	**0.15** J	✓	**0.20**	**0.060**	**mg/L**	**1**	FD
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Barium	**7440-39-3**	**6010C**	**0.067**		**0.020**	**0.0080**	**mg/L**	**1**	
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Calcium	**7440-70-2**	**6010C**	**110**		**5.0**	**1.6**	**mg/L**	**1**	
Chromium	**7440-47-3**	**6010C**	~~**0.0017**~~ 0.0050 U	✓	**0.0050**	**0.0016**	**mg/L**	**1**	EBL
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Iron	**7439-89-6**	**6010C**	**8.3**	✓	**0.10**	**0.030**	**mg/L**	**1**	
Lead	**7439-92-1**	**6010C**	**0.0034**	**J**	**0.010**	**0.0030**	**mg/L**	**1**	
Magnesium	**7439-95-4**	**6010C**	**4.5**	**J**	**5.0**	**1.6**	**mg/L**	**1**	
Manganese	**7439-96-5**	**6010C**	**0.16**		**0.015**	**0.0049**	**mg/L**	**1**	
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Potassium	**7440-09-7**	**6010C**	**2.5**	**J**	**5.0**	**1.6**	**mg/L**	**2**	
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Sodium	**7440-23-5**	**6010C**	**16**		**5.0**	**1.6**	**mg/L**	**1**	
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/17/2009**

Laboratory ID: **KL16031-015**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/23/2009 1854	KJC	12/21/2009 1900	24048
2	3005A	6010C	1	12/31/2009 1040	CDF	12/21/2009 1900	24048

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**0.070**	J ~~J~~	**0.20**	**0.060**	**mg/L**	**1** FD
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	**7440-38-2**	**6010C**	**0.0034**	**J**	**0.010**	**0.0030**	**mg/L**	**1**
Barium	**7440-39-3**	**6010C**	**0.071**		**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**110**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**8.4**	~~B~~	**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	**7439-95-4**	**6010C**	**4.6**	**J**	**5.0**	**1.6**	**mg/L**	**1**
Manganese	**7439-96-5**	**6010C**	**0.16**		**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	**7440-09-7**	**6010C**	**2.2**	**J**	**5.0**	**1.6**	**mg/L**	**2**
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	**7440-23-5**	**6010C**	**17**		**5.0**	**1.6**	**mg/L**	**1**
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL16031

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59D-09D	KL16031-001	Water
2	IR86-EB01121409	KL16031-002	Water
3	IR86-GW62-09D	KL16031-003	Water
4	IR86-GW62D-09D	KL16031-004	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS5-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121109	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW62-09D ug/L	IR86-GW62D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound	IR86-GW59-09D ug/L	IR86-GW59D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/24/2009 0147	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.026	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.066	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.026	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.043	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.053	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		48	20-150
Fluoranthene-d10		55	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3520C	8270D (SIM)	1	01/17/2010 1118	GLR	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	2
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	2
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	2
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	2
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	R ~~U~~	0.20	0.020	ug/L	2 ISL
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	R ~~U~~	0.20	0.019	ug/L	2
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	R ~~U~~	0.20	0.062	ug/L	2
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	R ~~U~~	0.20	0.024	ug/L	2
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	2
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	R ~~U~~	0.20	0.040	ug/L	2 ISL
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	2
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	2
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	R ~~U~~	0.20	0.050	ug/L	2 ISL
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	2
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	2
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		52	20-150
Fluoranthene-d10		71	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/24/2009 0258	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		49	20-150
Fluoranthene-d10		50	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	12/24/2009 0327	KSH	12/17/2009 1718	23794

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.026	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.066	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.026	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.043	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.053	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		43	20-150
Fluoranthene-d10		45	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
3/17/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL16031

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59D-09D	KL16031-001	Water
1MS*	IR86-GW59D-09DMS	KL16031-001MS	Water
1MSD*	IR86-GW59D-09DMSD	KL16031-001MSD	Water
1RE	IR86-GW59D-09DRE	KL16031-001RE	Water
2	IR86-EB01121409	KL16031-002	Water
2RE	IR86-EB01121409RE	KL16031-002RE	Water
3	IR86-GW62-09D	KL16031-003	Water
3MS**	IR86-GW62-09DMS	KL16031-003MS	Water
3MSD**	IR86-GW62-09DMSD	KL16031-003MSD	Water
3RE**	IR86-GW62-09DRE	KL16031-003RE	Water
4	IR86-GW62D-09D	KL16031-004	Water
4RE**	IR86-GW62D-09DRE	KL16031-004RE	Water

* - Pesticides ** - PCBs

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1RE	12/12/09	12/27/09	15	J/R
2RE	12/14/09	12/27/09	13	J/UJ
3RE	12/14/09	01/04/10	21	J/R
4RE	12/14/09	01/04/10	21	J/R

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Pesticides			
Sample ID	Surrogate	%R	Qualifier
2	DCB	14%	J/UJ
2RE	DCB	20%	None - See HT

PCBs			
Sample ID	Surrogate	%R	Qualifier
2	DCB	15%	J/UJ
2RE	DCB,	25%	None - See HT
4RE	DCB	23%	None - See HT

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121109	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW62-09D ug/L	IR86-GW62D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound	IR86-GW59-09D ug/L	IR86-GW59D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All criteria were met.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0430	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0156	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		50	30-135	H	59	30-135
Tetrachloro-m-xylene		93	25-140	H	89	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

IRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0430	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0156	ASB	12/27/2009 1200	24280

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026 R	UH	0.026	0.0020	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.026	UH	0.026	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.026	UH	0.026	0.0031	ug/L	2
beta-BHC	319-85-7	8081B	0.026	UH	0.026	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.026	UH	0.026	0.0082	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.026	UH	0.026	0.0031	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.026	UH	0.026	0.0031	ug/L	2
4,4'-DDD	72-54-8	8081B	0.026	UH	0.026	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.026	UH	0.026	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Dieldrin	60-57-1	8081B	0.026	UH	0.026	0.0041	ug/L	2
Endosulfan I	959-98-8	8081B	0.026	UH	0.026	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.026	UH	0.026	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin	72-20-8	8081B	0.026	UH	0.026	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin ketone	53494-70-5	8081B	0.026	UH	0.026	0.0041	ug/L	2
Heptachlor	76-44-8	8081B	0.026	UH	0.026	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.26	UH	0.26	0.031	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0446	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0243	ASB	12/27/2009 1200	24280

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025 UJ	U	0.025	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	14	30-135	HN	20	30-135
Tetrachloro-m-xylene		45	25-140	H	90	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0446	ASB	12/18/2009 2036	23902
2	3520C	8081B	1	12/30/2009 0243	ASB	12/27/2009 1200	24280

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.027 UJ	UH	0.027	0.0022	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.027	UH	0.027	0.0054	ug/L	2
alpha-BHC	319-84-6	8081B	0.027	UH	0.027	0.0032	ug/L	2
beta-BHC	319-85-7	8081B	0.027	UH	0.027	0.020	ug/L	2
delta-BHC	319-86-8	8081B	0.027	UH	0.027	0.0086	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.027	UH	0.027	0.0032	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.027	UH	0.027	0.0032	ug/L	2
4,4'-DDD	72-54-8	8081B	0.027	UH	0.027	0.0065	ug/L	2
4,4'-DDE	72-55-9	8081B	0.027	UH	0.027	0.0065	ug/L	2
4,4'-DDT	50-29-3	8081B	0.027	UH	0.027	0.0032	ug/L	2
Dieldrin	60-57-1	8081B	0.027	UH	0.027	0.0043	ug/L	2
Endosulfan I	959-98-8	8081B	0.027	UH	0.027	0.0065	ug/L	2
Endosulfan II	33213-65-9	8081B	0.027	UH	0.027	0.026	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.027	UH	0.027	0.0032	ug/L	2
Endrin	72-20-8	8081B	0.027	UH	0.027	0.0054	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.027	UH	0.027	0.0032	ug/L	2
Endrin ketone	53494-70-5	8081B	0.027	UH	0.027	0.0043	ug/L	2
Heptachlor	76-44-8	8081B	0.027	UH	0.027	0.022	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.027	UH	0.027	0.0032	ug/L	2
Methoxychlor	72-43-5	8081B	0.11	UH	0.11	0.015	ug/L	2
Toxaphene	8001-35-2	8081B	0.27	UH	0.27	0.032	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0501	ASB	12/18/2009 2036	23902

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		45	30-135
Tetrachloro-m-xylene		94	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/29/2009 0517	ASB	12/18/2009 2036	23902

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		35	30-135
Tetrachloro-m-xylene		92	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**

Description: **IR86-GW59D-09D**

Date Sampled: **12/12/2009 1245**

Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**

Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0018	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2219	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

IRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0018	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2219	NCM	12/27/2009 1200	24281

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26 R	UH	0.26	0.051	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.61	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.51	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.51	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.51	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.26	UH	0.26	0.061	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		55	40-135	H	77	40-135
Tetrachloro-m-xylene		109	44-130	H	113	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0031	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2231	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25 UJ	~~U~~	0.25	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.51	~~U~~	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	~~U~~	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	~~U~~	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	~~U~~	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	~~U~~	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	~~U~~	0.25	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0031	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2231	NCM	12/27/2009 1200	24281

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.27 UJ	UH	0.27	0.054	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.54	UH	0.54	0.15	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.65	UH	0.65	0.22	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.54	UH	0.54	0.15	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.54	UH	0.54	0.16	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.54	UH	0.54	0.12	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.27	UH	0.27	0.065	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	15	40-135	HN	25	40-135
Tetrachloro-m-xylene		52	44-130	H	114	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0043	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2244	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		52	40-135	H	56	40-135
Tetrachloro-m-xylene		110	44-130	H	113	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0043	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2244	NCM	12/27/2009 1200	24281

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26 R	UH	0.26	0.052	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.52	UH	0.52	0.15	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.63	UH	0.63	0.21	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.52	UH	0.52	0.15	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.52	UH	0.52	0.16	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.52	UH	0.52	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.26	UH	0.26	0.063	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		52	40-135	H	56	40-135
Tetrachloro-m-xylene		110	44-130	H	113	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Uyw 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0121	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2257	NCM	12/27/2009 1200	24281

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		41	40-135	HN	23	40-135
Tetrachloro-m-xylene		112	44-130	H	114	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	12/22/2009 0121	ASB	12/18/2009 2036	23926
2	3520C	8082A	1	01/04/2010 2257	NCM	12/27/2009 1200	24281

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25 R	UH	0.25	0.050	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.50	UH	0.50	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.60	UH	0.60	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.50	UH	0.50	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.50	UH	0.50	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.50	UH	0.50	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.25	UH	0.25	0.060	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		41	40-135	HN	23	40-135
Tetrachloro-m-xylene		112	44-130	H	114	44-130

Exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL16031

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59D-09D	KL16031-001	Water
2	IR86-EB01121409	KL16031-002	Water
3	IR86-GW62-09D	KL16031-003	Water
4	IR86-GW62D-09D	KL16031-004	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF.

Surrogates - The samples exhibited acceptable surrogate %R values.

MS/MSD - AMS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS6-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121109	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW62-09D ug/L	IR86-GW62D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound	IR86-GW59-09D ug/L	IR86-GW59D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1409	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.096	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.064	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	U	5.3	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.62	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.064	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.62	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.46	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.27	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.095	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.68	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.27	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.45	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59D-09D**
Date Sampled: **12/12/2009 1245**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1409	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.26	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.61	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	40-110
2-Fluorobiphenyl		56	50-110
Terphenyl-d14		54	50-135
2-Fluorophenol		43	20-110
Phenol-d5		44	10-115
2,4,6-Tribromophenol		60	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

KW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1429	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1	
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1	
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1	
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1	
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1	
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1	
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1	
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1	
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	R ~~U~~	1.0	0.089	ug/L	1	ISL
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1	
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1	
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1	
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1	
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1	
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1	
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1	
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1	
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1	
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1	
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1	
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1429	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110
2-Fluorobiphenyl		80	50-110
Terphenyl-d14		69	50-135
2-Fluorophenol		61	20-110
Phenol-d5		59	10-115
2,4,6-Tribromophenol		71	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/7/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1449	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1449	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	40-110
2-Fluorobiphenyl		64	50-110
Terphenyl-d14		56	50-135
2-Fluorophenol		54	20-110
Phenol-d5		55	10-115
2,4,6-Tribromophenol		64	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MJ 3/19/10

Semivolatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1509	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.096	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.064	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	U	5.3	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.62	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.064	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.62	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.46	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.27	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.095	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.68	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.27	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.45	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/16/2009**

Laboratory ID: **KL16031-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1509	GLR	12/17/2009 1718	23797

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.26	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.61	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	40-110
2-Fluorobiphenyl		70	50-110
Terphenyl-d14		60	50-135
2-Fluorophenol		61	20-110
Phenol-d5		61	10-115
2,4,6-Tribromophenol		71	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 19, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW59D-09D	KL17033-004	Water
2	IR86-GW63IW-09D	KL17033-006	Water
3	IR86-GW64-09D	KL17033-007	Water
3MS	IR86-GW64-09DMS	KL17033-007MS	Water
3MSD	IR86-GW64-09DMSD	KL17033-007MSD	Water
4	IR86-EB01121709	KL17033-008	Water
5	IR86-GW56-09D	KL17033-009	Water
5MS	IR86-GW56-09DMS	KL17033-009MS	Water
5MSD	IR86-GW56-09DMSD	KL17033-009MSD	Water
6	IR86-EB01121609	KL17033-010	Water
7	IR86-GW60IW-09D	KL17033-011	Water
8	IR86-GW58-09D	KL17033-012	Water
9	IR86-GW58IW-09D	KL17033-013	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Aluminum	0.11	0.55	U	1, 2, 4, 5, 7
Beryllium	0.0022	0.011	U	4, 5, 6, 7, 8, 9

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Iron	0.058	0.29	None	All >5X

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-EB01121309	None - ND	-	-	-	-
IR86-EB01121509	None - ND	-	-	-	-
IR86-EB01121609	Arsenic	0.0038	0.019	None	All ND
IR86-EB01121709	Arsenic	0.0036	0.018	None	All ND
IR86-FB01-120809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD ID	Compound	MS/MSD %R/RPD	Qualifier	Affected Samples
5	Sodium	48%/Ok/Ok	J/UJ	All Samples

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW59-09D ug/L	IR86-GW59D-09D ug/L	RPD	Qualifier
Barium	0.014	0.015	7%	None
Calcium	140	130	7%	None
Iron	4.4	4.6	4%	None
Lead	0.0041	0.0043	5%	None
Magnesium	3.6	3.8	5%	None
Manganese	0.072	0.069	4%	None
Potassium	1.6	2.4	40%	None
Silver	0.0017	0.0023	30%	None
Sodium	14	14	0%	None

Compound Quantitation - No discrepancies were identified.

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW59D-09D
Date Sampled: 12/12/2009 1245
Date Received: 12/17/2009

Laboratory ID: KL17033-004
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1118	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1617	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20 ~~0.17~~	U ~~B~~	0.20	0.060	mg/L	2 MBL
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.015	J	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	130		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	4.6	~~B~~	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.0043	J	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	3.8	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.069		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	2.4	J	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0023	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	14	J	5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/19/10

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1125	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1620	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	0.20 ~~0.10~~	U ~~BJ~~	0.20	0.060	mg/L	2	MBL
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Barium	7440-39-3	6010C	0.024		0.020	0.0080	mg/L	1	
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Calcium	7440-70-2	6010C	150		5.0	1.6	mg/L	1	
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Iron	7439-89-6	6010C	3.0	~~B~~	0.10	0.030	mg/L	1	
Lead	7439-92-1	6010C	0.0041	J	0.010	0.0030	mg/L	1	
Magnesium	7439-95-4	6010C	3.8	J	5.0	1.6	mg/L	1	
Manganese	7439-96-5	6010C	0.058		0.015	0.0049	mg/L	1	
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Potassium	7440-09-7	6010C	2.0	J	5.0	1.6	mg/L	1	
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Silver	7440-22-4	6010C	0.0022	J	0.0050	0.0016	mg/L	1	
Sodium	7440-23-5	6010C	12 J		5.0	1.6	mg/L	1	MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

TAL Metals

3

Client: **CH2M HILL, Inc.**
Description: **IR86-GW64-09D**
Date Sampled: **12/16/2009 1630**
Date Received: **12/19/2009**

Laboratory ID: **KL17033-007**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1137	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1632	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	**7429-90-5**	**6010C**	**1.3**	~~B~~	**0.20**	**0.060**	**mg/L**	**2**
Antimony	7440-36-0	6010C	0.0030	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.0030	U	0.010	0.0030	mg/L	1
Barium	**7440-39-3**	**6010C**	**0.012**	**J**	**0.020**	**0.0080**	**mg/L**	**1**
Beryllium	7440-41-7	6010C	0.0013	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.00060	U	0.0020	0.00060	mg/L	1
Calcium	**7440-70-2**	**6010C**	**58**		**5.0**	**1.6**	**mg/L**	**1**
Chromium	7440-47-3	6010C	0.0016	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.0080	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0016	U	0.0050	0.0016	mg/L	1
Iron	**7439-89-6**	**6010C**	**0.36**	~~B~~	**0.10**	**0.030**	**mg/L**	**1**
Lead	7439-92-1	6010C	0.0030	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	1.6	U	5.0	1.6	mg/L	1
Manganese	**7439-96-5**	**6010C**	**0.013**	**J**	**0.015**	**0.0049**	**mg/L**	**1**
Nickel	7440-02-0	6010C	0.013	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	1.6	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.0030	U	0.010	0.0030	mg/L	1
Silver	**7440-22-4**	**6010C**	**0.0020**	**J**	**0.0050**	**0.0016**	**mg/L**	**1**
Sodium	**7440-23-5**	**6010C**	**5.7** J		**5.0**	**1.6**	**mg/L**	**1** MSL
Thallium	7440-28-0	6010C	0.016	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.016	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.0060	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/19/10

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1152	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1647	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20 ~~0.074~~	U ~~BJ~~	0.20	0.060	mg/L	2 MBL
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.0036	J	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0048 ~~0.0018~~	U ~~BJ~~	0.0040	0.0013	mg/L	1 MBL
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	UJ ~~U~~	5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/19/10

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1200	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1655	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.39	U ~~B~~	0.20	0.060	mg/L	2 MBL
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.016	J	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040 ~~0.0020~~	U ~~B~~	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	160		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0024	J	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	3.9	~~B~~	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.0051	J	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	4.2	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.051		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	2.0	J	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0023	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	23 J		5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.0064	J	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
3/19/10

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1203	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1659	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.0038	J	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040 ~~0.0015~~	U ~~BJ~~	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	UJ ~~U~~	5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1207	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1702	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.27 U	~~B~~	0.20	0.060	mg/L	2 MBL
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.032		0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040 ~~0.0017~~ U	~~BJ~~	0.0040	0.0013	mg/L	1 MBL
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	130		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0016	J	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	3.2	~~B~~	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.0070	J	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	3.1	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.058		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0021	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	15 J		5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1211	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1706	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	1.2	~~B~~	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.0034	J	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.039		0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0013 ~~0.0014~~	U ~~B~~	0.0040	0.0013	mg/L	1 MBL
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	110		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0027	J	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	11	~~P~~	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.0068	J	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	6.5		5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.17		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	3.0	J	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0017	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	28	J	5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.0090	J	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

TAL Metals

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	12/31/2009 1222	CDF	12/23/2009 1800	24202
2	3005A	6010C	1	12/31/2009 1718	CDF	12/23/2009 1800	24202

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	2
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.017	J	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040 ~~0.0013~~	U ~~BJ~~	0.0040	0.0013	mg/L	1 MDL
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	140		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0016	J	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	3.6	~~B~~	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.0054	J	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	3.4	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.048		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	6.4		5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0025	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	19	J	5.0	1.6	mg/L	1 MSL
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

ew
3/19/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 19, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW63IW-09D	KL17033-006	Water
2	IR86-GW64-09D	KL17033-007	Water
2MS	IR86-GW64-09DMS	KL17033-007MS	Water
2MSD	IR86-GW64-09DMSD	KL17033-007MSD	Water
3	IR86-EB01121709	KL17033-008	Water
4	IR86-GW56-09D	KL17033-009	Water
5	IR86-EB01121609	KL17033-010	Water
5MS	IR86-EB01121609MS	KL17033-010MS	Water
5MSD	IR86-EB01121609MSD	KL17033-010MSD	Water
6	IR86-GW60IW-09D	KL17033-011	Water
7	IR86-GW58-09D	KL17033-012	Water
8	IR86-GW58IW-09D	KL17033-013	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
2	10 Compounds	High	None - All ND

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS5-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121309	None - ND	-	-	-	-
IR86-EB01121509	None - ND	-	-	-	-
IR86-EB01121609	None - ND	-	-	-	-
IR86-EB01121709	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 1955	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.23		0.22	0.026	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.067	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.043	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.054	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.033	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.025	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		64	20-150
Fluoranthene-d10		70	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/18/2010 1948	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1	
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1	
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1	
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1	
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	R ~~U~~	0.20	0.020	ug/L	1	ISL
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	R ~~U~~	0.20	0.019	ug/L	1	↓
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	R ~~U~~	0.20	0.062	ug/L	1	↓
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	R ~~U~~	0.20	0.024	ug/L	1	↓
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1	
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	R ~~U~~	0.20	0.040	ug/L	1	ISL
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1	
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1	
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	R ~~U~~	0.20	0.050	ug/L	1	ISL
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1	
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1	
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		44	20-150
Fluoranthene-d10		48	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 2019	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.24		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		60	20-150
Fluoranthene-d10		68	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 2044	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.30		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		73	20-150
Fluoranthene-d10		77	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 2109	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		62	20-150
Fluoranthene-d10		64	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 2222	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.23		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.11	J	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.10	J	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		64	20-150
Fluoranthene-d10		66	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/04/2010 2246	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.29		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.041	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.19	J	0.20	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		87	20-150
Fluoranthene-d10		70	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

hw
3/19/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/17/2010 1243	GLR	12/21/2009 1500	24000

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		67	20-150
Fluoranthene-d10		83	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 19, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW63IW-09D	KL17033-006	Water
2	IR86-GW64-09D	KL17033-007	Water
3	IR86-EB01121709	KL17033-008	Water
3RE*	IR86-EB01121709RE	KL17033-008RE	Water
4	IR86-GW56-09D	KL17033-009	Water
4RE*	IR86-GW56-09DRE	KL17033-009RE	Water
5	IR86-EB01121609	KL17033-010	Water
5RE*	IR86-EB01121609RE	KL17033-010RE	Water
6	IR86-GW60IW-09D	KL17033-011	Water
7	IR86-GW58-09D	KL17033-012	Water
7RE*	IR86-GW58-09DRE	KL17033-012RE	Water
8	IR86-GW58IW-09D	KL17033-013	Water

* - Pesticides

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
3RE (Pest)	12/17/09	01/02/10	16	J/UJ
4RE (Pest)	12/16/09	01/02/10	15	J/UJ
5RE (Pest)	12/16/09	01/02/10	15	J/UJ
7RE (Pest)	12/16/09	01/02/10	15	J/UJ

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Pesticides			
Sample ID	Surrogate	%R	Qualifier
3	DCB	29%	J/UJ
4	DCB	36%	J/UJ
5	DCB	24%	J/UJ
7	DCB	30%	J/UJ

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121309	None - ND	-	-	-	-
IR86-EB01121509	None - ND	-	-	-	-
IR86-EB01121609	None - ND	-	-	-	-
IR86-EB01121709	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All criteria were met.

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0519	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0053	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0084	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0053	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		56	30-135
Tetrachloro-m-xylene		81	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0535	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0050	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0080	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0060	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0050	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0653	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2140	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025 UJ	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

SSL

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0653	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2140	NCM	01/02/2010 1523	24573

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	UJ UH	0.025	0.0020	ug/L	2
gamma-BHC (Lindane)	58-89-9	8081B	0.025	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.025	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.025	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.025	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.025	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.025	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.025	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.025	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.025	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.025	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.025	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.025	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.025	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.25	UH	0.25	0.030	ug/L	2

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	25	30-135	H	60	30-135
Tetrachloro-m-xylene		83	25-140	H	87	25-140

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1605	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2200	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026 UJ	U	0.026	0.0021	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0083	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.023 J	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026 UJ	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

lw
3/19/10

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4RE

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1605	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2200	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025 UJ	UH	0.025	0.0020	ug/L	2
gamma-BHC (Lindane)	58-89-9	8081B	0.025	UH	0.025	0.0050	ug/L	2
alpha-BHC	319-84-6	8081B	0.025	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.025	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.025	UH	0.025	0.0080	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.025	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.025	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.019 UJ	JH	0.025	0.0060	ug/L	2
4,4'-DDE	72-55-9	8081B	0.025 UJ	UH	0.025	0.0060	ug/L	2
4,4'-DDT	50-29-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.025	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.025	UH	0.025	0.0060	ug/L	2
Endosulfan II	33213-65-9	8081B	0.025	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.025	UH	0.025	0.0050	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.025	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.025	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.025	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.025	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.25	UH	0.25	0.030	ug/L	2

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	28	30-135	H	55	30-135
Tetrachloro-m-xylene		84	25-140	H	77	25-140

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW 3/19/10

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0724	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2259	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.027	UJ U	0.027	0.0022	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.027	U	0.027	0.0055	ug/L	1
alpha-BHC	319-84-6	8081B	0.027	U	0.027	0.0033	ug/L	1
beta-BHC	319-85-7	8081B	0.027	U	0.027	0.021	ug/L	1
delta-BHC	319-86-8	8081B	0.027	U	0.027	0.0088	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.027	U	0.027	0.0033	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.027	U	0.027	0.0033	ug/L	1
4,4'-DDD	72-54-8	8081B	0.027	U	0.027	0.0066	ug/L	1
4,4'-DDE	72-55-9	8081B	0.027	U	0.027	0.0066	ug/L	1
4,4'-DDT	50-29-3	8081B	0.027	U	0.027	0.0033	ug/L	1
Dieldrin	60-57-1	8081B	0.027	U	0.027	0.0044	ug/L	1
Endosulfan I	959-98-8	8081B	0.027	U	0.027	0.0066	ug/L	1
Endosulfan II	33213-65-9	8081B	0.027	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.027	U	0.027	0.0033	ug/L	1
Endrin	72-20-8	8081B	0.027	U	0.027	0.0055	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.027	U	0.027	0.0033	ug/L	1
Endrin ketone	53494-70-5	8081B	0.027	U	0.027	0.0044	ug/L	1
Heptachlor	76-44-8	8081B	0.027	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.027	U	0.027	0.0033	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.27	U	0.27	0.033	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0724	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2259	NCM	01/02/2010 1523	24573

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UJ UH	0.026	0.0021	ug/L	2 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	UH	0.026	0.0053	ug/L	2
alpha-BHC	319-84-6	8081B	0.026	UH	0.026	0.0032	ug/L	2
beta-BHC	319-85-7	8081B	0.026	UH	0.026	0.020	ug/L	2
delta-BHC	319-86-8	8081B	0.026	UH	0.026	0.0084	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.026	UH	0.026	0.0032	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.026	UH	0.026	0.0032	ug/L	2
4,4'-DDD	72-54-8	8081B	0.026	UH	0.026	0.0063	ug/L	2
4,4'-DDE	72-55-9	8081B	0.026	UH	0.026	0.0063	ug/L	2
4,4'-DDT	50-29-3	8081B	0.026	UH	0.026	0.0032	ug/L	2
Dieldrin	60-57-1	8081B	0.026	UH	0.026	0.0042	ug/L	2
Endosulfan I	959-98-8	8081B	0.026	UH	0.026	0.0063	ug/L	2
Endosulfan II	33213-65-9	8081B	0.026	UH	0.026	0.025	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.026	UH	0.026	0.0032	ug/L	2
Endrin	72-20-8	8081B	0.026	UH	0.026	0.0053	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.026	UH	0.026	0.0032	ug/L	2
Endrin ketone	53494-70-5	8081B	0.026	UH	0.026	0.0042	ug/L	2
Heptachlor	76-44-8	8081B	0.026	UH	0.026	0.021	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.026	UH	0.026	0.0032	ug/L	2
Methoxychlor	72-43-5	8081B	0.11	UH	0.11	0.015	ug/L	2
Toxaphene	8001-35-2	8081B	0.26	UH	0.26	0.032	ug/L	2

exclude

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	19	30-135	H	62	30-135
Tetrachloro-m-xylene		74	25-140	H	89	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/19/10

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0740	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		32	30-135
Tetrachloro-m-xylene		91	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0755	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2337	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UJ U	0.026	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7RE

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0755	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/05/2010 2337	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	UH	0.026	0.0020	ug/L	2
gamma-BHC (Lindane)	58-89-9	8081B	0.026	UH	0.026	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.026	UH	0.026	0.0031	ug/L	2
beta-BHC	319-85-7	8081B	0.026	UH	0.026	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.026	UH	0.026	0.0082	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.026	UH	0.026	0.0031	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.026	UH	0.026	0.0031	ug/L	2
4,4'-DDD	72-54-8	8081B	0.026	UH	0.026	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.026	UH	0.026	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Dieldrin	60-57-1	8081B	0.026	UH	0.026	0.0041	ug/L	2
Endosulfan I	959-98-8	8081B	0.026	UH	0.026	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.026	UH	0.026	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin	72-20-8	8081B	0.026	UH	0.026	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.026	UH	0.026	0.0031	ug/L	2
Endrin ketone	53494-70-5	8081B	0.026	UH	0.026	0.0041	ug/L	2
Heptachlor	76-44-8	8081B	0.026	UH	0.026	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.026	UH	0.026	0.0031	ug/L	2
Methoxychlor	72-43-5	8081B	0.10	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.26	UH	0.26	0.031	ug/L	2

UJ

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	23	30-135	H	45	30-135
Tetrachloro-m-xylene		82	25-140	H	79	25-140

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Organochlorine Pesticides by GC

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 0811	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0053	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0084	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0053	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		42	30-135
Tetrachloro-m-xylene		83	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

aw
3/19/10

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2146	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.053	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.53	U	0.53	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.53	U	0.53	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		66	40-135
Tetrachloro-m-xylene		97	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2159	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.050	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.60	U	0.60	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.50	U	0.50	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.50	U	0.50	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.060	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2237	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/19/10

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2249	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2302	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.27	U	0.27	0.055	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.55	U	0.55	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.66	U	0.66	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.55	U	0.55	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.55	U	0.55	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.55	U	0.55	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.27	U	0.27	0.066	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2314	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		41	40-135
Tetrachloro-m-xylene		118	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2327	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

TCL Aroclors

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/06/2010 2340	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.053	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.53	U	0.53	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.53	U	0.53	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.53	U	0.53	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		56	40-135
Tetrachloro-m-xylene		107	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 19, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW63IW-09D	KL17033-006	Water
2	IR86-GW64-09D	KL17033-007	Water
2MS	IR86-GW64-09DMS	KL17033-007MS	Water
2MSD	IR86-GW64-09DMSD	KL17033-007MSD	Water
3	IR86-EB01121709	KL17033-008	Water
3MS	IR86-EB01121709MS	KL17033-008MS	Water
3MSD	IR86-EB01121709MSD	KL17033-008MSD	Water
4	IR86-GW56-09D	KL17033-009	Water
5	IR86-EB01121609	KL17033-010	Water
6	IR86-GW60IW-09D	KL17033-011	Water
7	IR86-GW58-09D	KL17033-012	Water
8	IR86-GW58IW-09D	KL17033-013	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
7	Terphenyl-d14	46%	None for 1 out

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
2	Atrazine	Ok/Ok/27	None for RPD Alone
	Caprolactam	Ok/Ok/22	
	2,4-Dimethylphenol	Ok/Ok/49	
3	Benzaldehyde	Ok/Ok/28	None for RPD Alone

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121309	None - ND	-	-	-	-
IR86-EB01121509	None - ND	-	-	-	-
IR86-EB01121609	None - ND	-	-	-	-
IR86-EB01121709	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1531	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.35	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.4	U	5.4	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.098	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.065	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.4	U	5.4	0.24	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.4	U	5.4	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.25	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.4	U	5.4	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.4	U	5.4	0.63	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.23	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.4	U	5.4	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.42	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.4	U	5.4	0.065	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.63	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.4	U	5.4	0.47	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.27	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.41	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.097	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.4	U	5.4	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.25	ug/L	1
Hexachloroethane	67-72-1	8270D	5.4	U	5.4	0.24	ug/L	1
Isophorone	78-59-1	8270D	5.4	U	5.4	0.23	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.33	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.70	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.36	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.25	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.27	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.42	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.4	U	5.4	0.46	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.4	U	5.4	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1531	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.4	U	5.4	0.26	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.4	U	5.4	0.62	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.4	U	5.4	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110
2-Fluorobiphenyl		75	50-110
Terphenyl-d14		75	50-135
2-Fluorophenol		64	20-110
Phenol-d5		67	10-115
2,4,6-Tribromophenol		81	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2112	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2112	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		74	40-110
2-Fluorobiphenyl		82	50-110
Terphenyl-d14		68	50-135
2-Fluorophenol		69	20-110
Phenol-d5		69	10-115
2,4,6-Tribromophenol		81	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1551	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1551	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		71	40-110
2-Fluorobiphenyl		77	50-110
Terphenyl-d14		72	50-135
2-Fluorophenol		65	20-110
Phenol-d5		68	10-115
2,4,6-Tribromophenol		62	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1831	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1831	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		71	40-110
2-Fluorobiphenyl		79	50-110
Terphenyl-d14		76	50-135
2-Fluorophenol		68	20-110
Phenol-d5		72	10-115
2,4,6-Tribromophenol		88	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

AW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1911	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1911	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110
2-Fluorobiphenyl		68	50-110
Terphenyl-d14		72	50-135
2-Fluorophenol		57	20-110
Phenol-d5		62	10-115
2,4,6-Tribromophenol		54	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1931	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 1931	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		69	40-110
2-Fluorobiphenyl		75	50-110
Terphenyl-d14		73	50-135
2-Fluorophenol		66	20-110
Phenol-d5		69	10-115
2,4,6-Tribromophenol		80	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 1335	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.092	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.40	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.44	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.39	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.091	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.40	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.43	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/12/2010 1335	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110
2-Fluorobiphenyl		68	50-110
Terphenyl-d14	N	46	50-135
2-Fluorophenol		64	20-110
Phenol-d5		65	10-115
2,4,6-Tribromophenol		69	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2012	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.1	U	5.1	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2012	GLR	12/21/2009 1500	24003

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	U	5.1	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	40-110
2-Fluorobiphenyl		70	50-110
Terphenyl-d14		67	50-135
2-Fluorophenol		59	20-110
Phenol-d5		65	10-115
2,4,6-Tribromophenol		79	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/19/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17033

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 19, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW44DW-09D	KL17033-001	Water
2	IR86-GW29IW-09D	KL17033-002	Water
3	IR86-GW42DW-09D	KL17033-003	Water
4	IR86-GW59D-09D	KL17033-004	Water
4RE	IR86-GW59D-09DRE	KL17033-004RE	Water
5	IR86-GW18DW-09D	KL17033-005	Water
5MS	IR86-GW18DW-09DMS	KL17033-005MS	Water
5MSD	IR86-GW18DW-09DMSD	KL17033-005MSD	Water
6	IR86-GW63IW-09D	KL17033-006	Water
7	IR86-GW64-09D	KL17033-007	Water
8	IR86-EB01121709	KL17033-008	Water
9	IR86-GW56-09D	KL17033-009	Water
10	IR86-EB01121609	KL17033-010	Water
11	IR86-GW60IW-09D	KL17033-011	Water
12	IR86-GW58-09D	KL17033-012	Water
12RE	IR86-GW58-09DRE	KL17033-012RE	Water
13	IR86-GW58IW-09D	KL17033-013	Water
13DL	IR86-GW58IW-09DDL	KL17033-013DL	Water
14	IR86-GW34IW-09D	KL17033-014	Water
15	IR86-GW49DW-09D	KL17033-015	Water
16	IR86-TB01121809	KL17033-016	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples except the following.

Sample ID	Date Sampled	Date Analyzed	# of Days	Qualifier
4RE	12/12/09	12/27/09	15	J/UJ
12RE	12/16/09	12/31/09	15	J/UJ

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
12/26/09	2-Butanone	0.042 RRF	J/R	1, 3, 4RE
12/29/09	2-Butanone	0.047 RRF	J/R	2, 5, 6, 7, 9, 10, 13DL
12/31/09	2-Butanone	0.037 RRF	J/R	8, 11, 14, 15, 16

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/24/09	Dichlorodifluoromethane	37.1%	J/UJ	4, 12, 13
	Carbon Disulfide	29.5%		
12/27/09	2-Butanone	0.039 RRF	None	See ICAL
12/29/09	Dichlorodifluoromethane	25.6%	J/UJ	6, 7, 13DL
	Bromoform	32.6%		
	2-Butanone	0.043 RRF	None	See ICAL

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
4	Toluene-d8	122%	None - All ND
12	Toluene-d8	122%	J - Positive Results
13	Toluene-d8	125%	J - Positive Results

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
5	41 Compounds	High	None - All ND

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 24299	Chloromethane	151%	None	All ND
	Dichlorodifluoromethane	194%		

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01121609	None - ND	-	-	-	-
IR86-TB01121809	None - ND	-	-	-	-
IR86-EB01121309	Chloroform	1.4	7.0	None	All ND
IR86-EB01121509	None - ND	-	-	-	-
IR86-EB01121609	None - ND	-	-	-	-
IR86-EB01121709	Chloromethane	0.25	1.25	None	All ND
IR86-FB01-120809	Chloroform	1.6	8.0	None	All ND
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - EDS Sample ID #13 exhibited trichloroethene over the linear range of the instrument. The sample was diluted and reanalyzed and the dilution result for this compound should be used for reporting.

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW44DW-09D
Date Sampled: 12/13/2009 1200
Date Received: 12/17/2009

Laboratory ID: KL17033-001
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1931	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	0.44	J	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW44DW-09D
Date Sampled: 12/13/2009 1200
Date Received: 12/17/2009

Laboratory ID: KL17033-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1931	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW29IW-09D
Date Sampled: 12/15/2009 1145
Date Received: 12/17/2009

Laboratory ID: KL17033-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1214	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	0.45	J	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	41		1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.19	J	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW29IW-09D
Date Sampled: 12/15/2009 1145
Date Received: 12/17/2009

Laboratory ID: KL17033-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1214	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	140		0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		84	70-120
Toluene-d8		95	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW42DW-09D
Date Sampled: 12/13/2009 1640
Date Received: 12/17/2009

Laboratory ID: KL17033-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1952	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICC
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	0.25	J	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W."
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW42DW-09D
Date Sampled: 12/13/2009 1640
Date Received: 12/17/2009

Laboratory ID: KL17033-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1952	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-120
Toluene-d8		108	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW59D-09D
Date Sampled: 12/12/2009 1245
Date Received: 12/17/2009

Laboratory ID: KL17033-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1437	MZ		24299
2	5030B	8260B	1	12/27/2009 2012	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	UJ ~~U~~	1.0	0.097	ug/L	1	CCH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1	CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW59D-09D
Date Sampled: 12/12/2009 1245
Date Received: 12/17/2009

Laboratory ID: KL17033-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1437	MZ		24299
2	5030B	8260B	1	12/27/2009 2012	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120	H	88	70-120
Toluene-d8	N	122	85-120	H	111	85-120
Bromofluorobenzene		111	75-120	H	100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW59D-09D
Date Sampled: 12/12/2009 1245
Date Received: 12/17/2009

Laboratory ID: KL17033-004
Matrix: Aqueous

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1437	MZ		24299
2	5030B	8260B	1	12/27/2009 2012	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	71-43-2	8260B	1.0	UH	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0	UH	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50 UJ	UH	0.50	0.085	ug/L	2 HT
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	UH	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	UH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MJ 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW59D-09D
Date Sampled: 12/12/2009 1245
Date Received: 12/17/2009

Laboratory ID: KL17033-004
Matrix: Aqueous

4 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1437	MZ		24299
2	5030B	8260B	1	12/27/2009 2012	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UH	1.0	0.031	ug/L	2
Trichloroethene	79-01-6	8260B	0.50	UH	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	UH	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	UH	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	UH	0.50	0.17	ug/L	2

UJ HIT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120	H	88	70-120
Toluene-d8	N	122	85-120	H	111	85-120
Bromofluorobenzene		111	75-120	H	100	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW18DW-09D
Date Sampled: 12/15/2009 1710
Date Received: 12/17/2009

Laboratory ID: KL17033-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1132	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.21	J	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW18DW-09D
Date Sampled: 12/15/2009 1710
Date Received: 12/17/2009

Laboratory ID: KL17033-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1132	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-120
Toluene-d8		94	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 2201	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2	
Benzene	71-43-2	8260B	0.20	J	1.0	0.027	ug/L	2	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2	
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	2	CEH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2	
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2	ICV
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2	
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	2	CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2	
cis-1,2-Dichloroethene	156-59-2	8260B	1.7		1.0	0.087	ug/L	2	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW63IW-09D
Date Sampled: 12/17/2009 1325
Date Received: 12/19/2009

Laboratory ID: KL17033-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 2201	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		73	70-120
Toluene-d8		92	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 2222	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2	
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	2	CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2	
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2	ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2	
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	2	CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW64-09D
Date Sampled: 12/16/2009 1630
Date Received: 12/19/2009

Laboratory ID: KL17033-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 2222	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		71	70-120
Toluene-d8		95	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1252	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	0.25	J	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	0.30	J	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121709
Date Sampled: 12/17/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-008
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1252	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1359	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	4.3		1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	2 JLW
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	2.3		1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	28		1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.6		1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW56-09D
Date Sampled: 12/16/2009 1511
Date Received: 12/19/2009

Laboratory ID: KL17033-009
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1359	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	2.4		0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-120
Toluene-d8		97	85-120
Bromofluorobenzene		90	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1420	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	~~R~~	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01121609
Date Sampled: 12/16/2009 1700
Date Received: 12/19/2009

Laboratory ID: KL17033-010
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/29/2009 1420	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-120
Toluene-d8		99	85-120
Bromofluorobenzene		89	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1313	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	0.12	J	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	0.51	J	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.22	J	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW60IW-09D
Date Sampled: 12/17/2009 1450
Date Received: 12/19/2009

Laboratory ID: KL17033-011
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1313	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-120
Toluene-d8		101	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1727	MZ		24299
2	5030B	8260B	1	12/31/2009 1334	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.2	J	1.0	0.027	ug/L	1	SSH
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	UJ ~~U~~	1.0	0.097	ug/L	1	CCH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	2.0	J	1.0	0.17	ug/L	1	SSH
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	2.8	J	1.0	0.071	ug/L	1	CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	0.48	J	1.0	0.094	ug/L	1	SSH
cis-1,2-Dichloroethene	156-59-2	8260B	150	↓	1.0	0.087	ug/L	1	↓
trans-1,2-Dichloroethene	156-60-5	8260B	3.7		1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	0.48	J	1.0	0.17	ug/L	1	SSH
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1727	MZ		24299
2	5030B	8260B	1	12/31/2009 1334	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	79-01-6	8260B	52	J	0.50	0.024	ug/L	1 SSH
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	68	J	0.50	0.065	ug/L	1 SSH
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120	H	103	70-120
Toluene-d8	N	122	85-120	H	102	85-120
Bromofluorobenzene		110	75-120	H	100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

ALW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

12RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1727	MZ		24299
2	5030B	8260B	1	12/31/2009 1334	DLB		24587

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	71-43-2	8260B	1.3 J	H	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	13 J	H	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	2.0 J	H	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0 UJ	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	120 J	H	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	3.4 J	H	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50 UJ	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.1 J	H	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0 UJ	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.66 J	JH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0 UJ	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

lw 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58-09D
Date Sampled: 12/16/2009 1020
Date Received: 12/19/2009

Laboratory ID: KL17033-012
Matrix: Aqueous

12 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1727	MZ		24299
2	5030B	8260B	1	12/31/2009 1334	DLB		24587

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UJ UH	1.0	0.031	ug/L	2
Trichloroethene	79-01-6	8260B	40	J H	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	UJ UH	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	49	J H	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.35	J JH	0.50	0.17	ug/L	2

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120	H	103	70-120
Toluene-d8	N	122	85-120	H	102	85-120
Bromofluorobenzene		110	75-120	H	100	75-120

Exclude

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
U = Not detected at or above the detection limit
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1748	MZ		24299
2	5030B	8260B	5	12/29/2009 2326	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.4	J	1.0	0.027	ug/L	1	SSH
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1	
Carbon disulfide	75-15-0	8260B	1.0	UJ ~~U~~	1.0	0.097	ug/L	1	CCH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1	CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	6.6	J	1.0	0.094	ug/L	1	SSH
cis-1,2-Dichloroethene	156-59-2	8260B	100		1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	6.2		1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	0.26	J ~~U~~	1.0	0.17	ug/L	1	SSH
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1748	MZ		24299
2	5030B	8260B	5	12/29/2009 2326	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	79-01-6	8260B	710 1~~200~~	- 2.5	~~0.500~~ .12	~~0.024~~	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	9.1	J	0.50	0.065	ug/L	1 SSH
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120		81	70-120
Toluene-d8	N	125	85-120		96	85-120
Bromofluorobenzene		110	75-120		95	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

13DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1748	MZ		24299
2	5030B	8260B	5	12/29/2009 2326	RRH		24662

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	50	U	50	17	ug/L	2
Benzene	71-43-2	8260B	1.3	J	5.0	0.14	ug/L	2
Bromodichloromethane	75-27-4	8260B	2.5	U	2.5	0.85	ug/L	2
Bromoform	75-25-2	8260B	5.0 UJ	~~U~~	5.0	0.051	ug/L	2 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	5.0	U	5.0	1.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	50 R	~~U~~	50	10	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	5.0	U	5.0	0.49	ug/L	2
Carbon tetrachloride	56-23-5	8260B	2.5	U	2.5	0.43	ug/L	2
Chlorobenzene	108-90-7	8260B	5.0	U	5.0	0.85	ug/L	2
Chloroethane	75-00-3	8260B	5.0	U	5.0	0.85	ug/L	2
Chloroform	67-66-3	8260B	5.0	U	5.0	0.85	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	5.0	U	5.0	0.87	ug/L	2
Cyclohexane	110-82-7	8260B	5.0	U	5.0	1.5	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	2.5	U	2.5	0.35	ug/L	2
Dibromochloromethane	124-48-1	8260B	2.5	U	2.5	0.85	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	2.5	U	2.5	0.31	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	5.0	U	5.0	0.85	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	5.0	U	5.0	0.85	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	5.0	U	5.0	0.85	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	5.0 UJ	~~U~~	5.0	0.35	ug/L	2 CCH
1,1-Dichloroethane	75-34-3	8260B	5.0	U	5.0	0.27	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	2.5	U	2.5	0.12	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	4.2	J	5.0	0.47	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	79		5.0	0.44	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	5.0	U	5.0	0.40	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	2.5	U	2.5	0.41	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	2.5	U	2.5	0.45	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	2.5	U	2.5	0.90	ug/L	2
Ethylbenzene	100-41-4	8260B	5.0	U	5.0	0.85	ug/L	2
2-Hexanone	591-78-6	8260B	25	U	25	1.4	ug/L	2
Isopropylbenzene	98-82-8	8260B	5.0	U	5.0	0.14	ug/L	2
Methyl acetate	79-20-9	8260B	5.0	U	5.0	1.5	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5.0	U	5.0	0.095	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	25	U	25	1.6	ug/L	2
Methylcyclohexane	108-87-2	8260B	25	U	25	4.8	ug/L	2
Methylene chloride	75-09-2	8260B	5.0	U	5.0	0.85	ug/L	2
Styrene	100-42-5	8260B	5.0	U	5.0	0.075	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	2.5	U	2.5	0.065	ug/L	2
Tetrachloroethene	127-18-4	8260B	5.0	U	5.0	0.072	ug/L	2
Toluene	108-88-3	8260B	5.0	U	5.0	0.85	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	5.0	U	5.0	1.5	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	2.5	U	2.5	0.85	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	5.0	U	5.0	0.14	ug/L	2

excluded

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58IW-09D
Date Sampled: 12/16/2009 1245
Date Received: 12/19/2009

Laboratory ID: KL17033-013
Matrix: Aqueous

13DL

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1748	MZ		24299
2	5030B	8260B	5	12/29/2009 2326	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	5.0	U	5.0	0.16	ug/L	2
Trichloroethene	79-01-6	8260B	7.10		2.5	0.12	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	2.5	U	2.5	0.25	ug/L	2
Vinyl chloride	75-01-4	8260B	2.5	U	2.5	0.33	ug/L	2
Xylenes (total)	1330-20-7	8260B	2.5	U	2.5	0.85	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120		81	70-120
Toluene-d8	N	125	85-120		96	85-120
Bromofluorobenzene		110	75-120		95	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW34IW-09D
Date Sampled: 12/17/2009 1200
Date Received: 12/19/2009

Laboratory ID: KL17033-015
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1355	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	2 JW
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	0.35	J	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	0.58	J	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	4.2		1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.26	J	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lw
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW34IW-09D
Date Sampled: 12/17/2009 1200
Date Received: 12/19/2009

Laboratory ID: KL17033-015
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1355	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	3.5		0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.60		0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

UW
3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW49DW-09D
Date Sampled: 12/17/2009 1241
Date Received: 12/19/2009

Laboratory ID: KL17033-016
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1416	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	2 IU
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/19/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW49DW-09D
Date Sampled: 12/17/2009 1241
Date Received: 12/19/2009

Laboratory ID: KL17033-016
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1416	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-120
Toluene-d8		101	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-TB01121809
Date Sampled: 12/18/2009 1200
Date Received: 12/19/2009

Laboratory ID: KL17033-017
Matrix: Aqueous

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1438	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 ICV
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-TB01121809
Date Sampled: 12/18/2009 1200
Date Received: 12/19/2009

Laboratory ID: KL17033-017
Matrix: Aqueous

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/31/2009 1438	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/19/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17043

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW43IW-09D	KL17043-001	Water
2	IR86-TB02121609	KL17043-002	Water
3	IR86-GW09-09D	KL17043-003	Water
4	IR86-GW55IWD-09D	KL17043-004	Water
5	IR86-GW17DW-09D	KL17043-005	Water
6	IR86-EB01121209	KL17043-006	Water
7	IR86-GW55IW-09D	KL17043-007	Water
8	IR86-GW59IW-09D	KL17043-008	Water
8RE	IR86-GW59IW-09DRE	KL17043-008RE	Water
9	IR86-GW03-09D	KL17043-009	Water
10	IR86-GW10IW-09D	KL17043-010	Water
10RE	IR86-GW10IW-09DRE	KL17043-010RE	Water
11	IR86-GW54IW-09D	KL17043-011	Water
12	IR86-GW44IW-09D	KL17043-012	Water
12RE	IR86-GW44IW-09DRE	KL17043-012RE	Water
13	IR86-GW19DW-09D	KL17043-013	Water
14	IR86-GW59-09D	KL17043-014	Water
14RE	IR86-GW59-09DRE	KL17043-014RE	Water
15	IR86-EB01121309	KL17043-015	Water
16	IR86-GW18DWD-09D	KL17043-016	Water
17	IR86-GW48IW-09D	KL17043-017	Water
18	IR86-GW31IW-09D	KL17043-018	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples except the following.

Sample ID	Date Sampled	Date Analyzed	# of Days	Qualifier
8RE	12/12/09	12/27/09	15	J/UJ - unless R
12RE	12/12/09	12/27/09	15	J/UJ - unless R

Sample ID	Date Sampled	Date Analyzed	# of Days	Qualifier
14RE	12/12/09	12/27/09	15	J/UJ - unless R
18	12/16/09	12/31/09	15	J/UJ - unless R

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
12/26/09	2-Butanone	0.041 RRF	J/R	1, 2, 4, 7, 8, 8RE, 9, 10, 10RE, 11, 12RE, 13, 14RE, 15
12/29/09	2-Butanone	0.047 RRF	J/R	16, 17
12/30/09	2-Butanone	0.037 RRF	J/R	18

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/24/09	Dichlorodifluoromethane	37.1%	J/UJ	12, 14
	Carbon Disulfide	29.5%		
12/27/09	2-Butanone	0.039 RRF	None	See ICAL
12/28/09	2-Butanone	40.0%	None	See ICAL
	Methyl Acetate	30.4%	J/UJ	10RE, 13
	Cyclohexane	26.3%		
	1,2-Dibromo-3-chloropropane	50.3%		
	2-Hexanone	31.2%		
12/29/09	Dichlorodifluoromethane	25.6%	J/UJ	17
	Bromoform	32.6%		
	2-Butanone	0.043 RRF	None	See ICAL
12/31/09	2-Butanone	0.032 RRF	None	See ICAL

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
8	1,2-Dichloroethane-d4	121%	J - Positive Results
12	Toluene-d8	121%	J - Positive Results
14	Toluene-d8	125%	None - All ND

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 24299	Chloromethane	186%	None	All ND
	Dichlorodifluoromethane	209%		
	Trichlorofluoromethane	146%		
LCS 24393	Chloromethane	140%	None	All ND
	Dichlorodifluoromethane	183%		
LCS 24501	Nine Compounds	High	None	All ND

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB02121609	None - ND	-	-	-	-
IR86-EB01121109	Chloroform	1.5	7.5	None	All ND
	Chloromethane	0.41	2.05		
IR86-EB01121209	Chloroform	1.7	8.5	U	8, 8RE
IR86-EB01121309	Chloroform	1.4	7.0	None	All ND
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121609	None - ND	-	-	-	-
IR86-FB01-120809	Chloroform	1.6	8.0	None	All ND
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW55IW-09D ug/L	IR86-GW55IWD-09D ug/L	RPD	Qualifier
Benzene	2.3	2.3	0%	None
1,1-Dichloroethane	0.27	0.31	14%	None
1,1-Dichloroethene	13	13	0%	None
cis-1,2-Dichloroethene	190	190	0%	None
trans-1,2-Dichloroethene	16	15	6%	None
Toluene	0.39	0.28	33%	None
Trichloroethene	0.28	0.25	11%	None
Vinyl Chloride	130	140	7%	None

Compound	IR86-GW59-09D ug/L	IR86-GW59D-09D ug/L	RPD	Qualifier
None	ND	ND	-	-

Compound	IR86-GW18DW-09D ug/L	IR86-GW18DWD-09D ug/L	RPD	Qualifier
Toluene	0.21	0.31	38%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - EDS Sample ID #10 exhibited 1,1,2-trichloro-1,2,2-trifluoroethane over the linear range of the instrument. The sample was diluted and reanalyzed and the dilution result for this compound should be used for reporting.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW43IW-09D**
Date Sampled: **12/13/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-001**
Matrix: **Aqueous**

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1559	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.22**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW43IW-09D**
Date Sampled: **12/13/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1559	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		90	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB02121609**
Date Sampled: **12/16/2009 1145**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1621	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB02121609**
Date Sampled: **12/16/2009 1145**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1621	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-120
Toluene-d8		110	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW09-09D**
Date Sampled: **12/11/2009 1555**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/23/2009 2301	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW09-09D**
Date Sampled: **12/11/2009 1555**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/23/2009 2301	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		113	70-120
Toluene-d8		115	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

WJ 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW55IWD-09D**
Date Sampled: **12/13/2009 1335**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1703	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**2.3**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.31**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**13**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**190**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**15**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.28**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW55IWD-09D**
Date Sampled: **12/13/2009 1335**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1703	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.25**	**J**	**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**140**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW17DW-09D**
Date Sampled: **12/11/2009 1635**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/23/2009 2345	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	**108-88-3**	**8260B**	**0.28**	**J**	**1.0**	**0.17**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW17DW-09D**
Date Sampled: **12/11/2009 1635**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/23/2009 2345	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		116	70-120
Toluene-d8		114	85-120
Bromofluorobenzene		107	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

uw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/24/2009 0006	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	2
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	2
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	2
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	**67-66-3**	**8260B**	**1.7**		**1.0**	**0.17**	**ug/L**	**2**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

kw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121209**
Date Sampled: **12/12/2009 1620**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	12/24/2009 0006	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		115	70-120
Toluene-d8		112	85-120
Bromofluorobenzene		106	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-GW5SIW-09D**
Date Sampled: **12/13/2009 1330**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1807	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**2.3**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.27**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**13**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**190**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**16**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.39**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW53W-09D**
Date Sampled: **12/13/2009 1330**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1807	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.28**	**J**	**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**130**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1828	MZ		24306
2	5030B	8260B	1	12/24/2009 0050	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**4.3**	J ~~B~~	**10**	**3.3**	**ug/L**	**2** SSH
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	2 ICL
Carbon disulfide	**75-15-0**	**8260B**	**0.21**	J ~~U~~	**1.0**	**0.097**	**ug/L**	**2** SSH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	2
Chloroform	**67-66-3**	**8260B**	1.0 ~~0.50~~	U ~~J~~	**1.0**	**0.17**	**ug/L**	**2** EBL
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

lew
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1828	MZ		24306
2	5030B	8260B	1	12/24/2009 0050	MZ		24393

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	2
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	H	88	70-120	N	121	70-120
Toluene-d8	H	108	85-120		113	85-120
Bromofluorobenzene	H	99	75-120		105	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-008**
Matrix: **Aqueous**

GRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 0050	MZ		24393
2	5030B	8260B	1	12/27/2009 1828	RRH		28009

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	3.3 UJ	UH	10	3.3	ug/L	2 HT
Benzene	71-43-2	8260B	0.027	UH	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.17	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	0.010	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	0.20	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	2.0 R	UH	10	2.0	ug/L	2 ICV
Carbon disulfide	75-15-0	8260B	0.097 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.085	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	0.17	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	0.17	UH	1.0	0.17	ug/L	2
Chloroform	**67-66-3**	**8260B**	1.0 ~~0.45~~ UJ	UH	**1.0**	**0.17**	**ug/L**	**2 EBL HT**
Chloromethane (Methyl chloride)	74-87-3	8260B	0.17 UJ	UH	1.0	0.17	ug/L	2 HT
Cyclohexane	110-82-7	8260B	0.30	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.069	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.17	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.061	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	0.17	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	0.17	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	0.17	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	0.071	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	0.054	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.023	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	0.094	UH	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	0.087	UH	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	0.079	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.081	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.090	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.18	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	0.17	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	0.27	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	0.029	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	0.30	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	0.019	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	0.31	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	0.95	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	0.17	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	0.015	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.013	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	0.014	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	0.17	UH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	0.30	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.17	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	0.029	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59IW-09D**
Date Sampled: **12/12/2009 1640**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-008**
Matrix: **Aqueous**

8RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 0050	MZ		24393
2	5030B	8260B	1	12/27/2009 1828	RRH		28009

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	0.031 UJ	UH	1.0	0.031	ug/L	2 HT
Trichloroethene	79-01-6	8260B	0.024	UH	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.051	UH	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.065	UH	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.17	UH	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	121	70-120	H	88	70-120
Toluene-d8		113	85-120	H	108	85-120
Bromofluorobenzene		105	75-120	H	99	75-120

Exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW03-09D**
Date Sampled: **12/14/2009 1445**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1849	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW03-09D**
Date Sampled: **12/14/2009 1445**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1849	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		90	70-120
Toluene-d8		108	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW10IW-09D**
Date Sampled: **12/14/2009 0930**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1910	MZ		24306
2	5030B	8260B	4	12/28/2009 2101	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**1.9**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R ~~U~~		10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	**110-82-7**	**8260B**	**1.5**		**1.0**	**0.30**	**ug/L**	**1**
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	**75-71-8**	**8260B**	**51**		**1.0**	**0.071**	**ug/L**	**1**
1,1-Dichloroethane	**75-34-3**	**8260B**	**3.4**		**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**37**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**1.1**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**0.92**	**J**	**1.0**	**0.17**	**ug/L**	**1**
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	**127-18-4**	**8260B**	**190**		**1.0**	**0.014**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**2.6**		**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	**76-13-1**	**8260B**	620 ~~700~~		4.0 ~~1.0~~	1.2 ~~0.30~~	**ug/L**	**1**
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RW
3/18/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW10IW-09D**
Date Sampled: **12/14/2009 0930**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1910	MZ		24306
2	5030B	8260B	4	12/28/2009 2101	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**54**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**19**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**6.3**		**0.50**	**0.17**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-120		105	70-120
Toluene-d8		105	85-120		102	85-120
Bromofluorobenzene		98	75-120		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/18/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW10IW-09D**
Date Sampled: **12/14/2009 0930**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-010**
Matrix: **Aqueous**

1ORE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1910	MZ		24306
2	5030B	8260B	4	12/28/2009 2101	RRH		24501

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	40	U	40	13	ug/L	2
Benzene	**71-43-2**	**8260B**	**1.7**	**J**	**4.0**	**0.11**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	2.0	U	2.0	0.68	ug/L	2
Bromoform	75-25-2	8260B	4.0	U	4.0	0.041	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	4.0	U	4.0	0.81	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	40	R ~~U~~	40	8.1	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	4.0	U	4.0	0.39	ug/L	2
Carbon tetrachloride	56-23-5	8260B	2.0	U	2.0	0.34	ug/L	2
Chlorobenzene	108-90-7	8260B	4.0	U	4.0	0.68	ug/L	2
Chloroethane	75-00-3	8260B	4.0	U	4.0	0.68	ug/L	2
Chloroform	67-66-3	8260B	4.0	U	4.0	0.68	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	4.0	U	4.0	0.70	ug/L	2
Cyclohexane	110-82-7	8260B	4.0	UJ ~~U~~	4.0	1.2	ug/L	2 CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	2.0	UJ ~~U~~	2.0	0.28	ug/L	2 CCH
Dibromochloromethane	124-48-1	8260B	2.0	U	2.0	0.68	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	2.0	U	2.0	0.24	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	4.0	U	4.0	0.68	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	4.0	U	4.0	0.68	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	4.0	U	4.0	0.68	ug/L	2
Dichlorodifluoromethane	**75-71-8**	**8260B**	**46**		**4.0**	**0.28**	**ug/L**	**2**
1,1-Dichloroethane	**75-34-3**	**8260B**	**3.3**	**J**	**4.0**	**0.21**	**ug/L**	**2**
1,2-Dichloroethane	107-06-2	8260B	2.0	U	2.0	0.093	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	4.0	U	4.0	0.38	ug/L	2
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**36**		**4.0**	**0.35**	**ug/L**	**2**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**1.0**	**J**	**4.0**	**0.32**	**ug/L**	**2**
1,2-Dichloropropane	78-87-5	8260B	2.0	U	2.0	0.32	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	2.0	U	2.0	0.36	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	2.0	U	2.0	0.72	ug/L	2
Ethylbenzene	100-41-4	8260B	4.0	U	4.0	0.68	ug/L	2
2-Hexanone	591-78-6	8260B	20	UJ ~~U~~	20	1.1	ug/L	2 CCH
Isopropylbenzene	98-82-8	8260B	4.0	U	4.0	0.12	ug/L	2
Methyl acetate	79-20-9	8260B	4.0	UJ ~~U~~	4.0	1.2	ug/L	2 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.0	U	4.0	0.076	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	20	U	20	1.2	ug/L	2
Methylcyclohexane	108-87-2	8260B	20	U	20	3.8	ug/L	2
Methylene chloride	75-09-2	8260B	4.0	U	4.0	0.68	ug/L	2
Styrene	100-42-5	8260B	4.0	U	4.0	0.060	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	2.0	U	2.0	0.052	ug/L	2
Tetrachloroethene	**127-18-4**	**8260B**	**180**		**4.0**	**0.057**	**ug/L**	**2**
Toluene	**108-88-3**	**8260B**	**2.6**	**J**	**4.0**	**0.68**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	**76-13-1**	**8260B**	**620**		**4.0**	**1.2**	**ug/L**	**2**
1,2,4-Trichlorobenzene	120-82-1	8260B	2.0	U	2.0	0.68	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	4.0	U	4.0	0.12	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW 3/18/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW10IW-09D**
Date Sampled: **12/14/2009 0930**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-010**
Matrix: **Aqueous**

10RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1910	MZ		24306
2	5030B	8260B	4	12/28/2009 2101	RRH		24501

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	4.0	U	4.0	0.12	ug/L	2
Trichloroethene	**79-01-6**	**8260B**	**52**		**2.0**	**0.098**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	2.0	U	2.0	0.20	ug/L	2
Vinyl chloride	75-01-4	8260B	2.0	U	2.0	0.26	ug/L	2
Xylenes (total)	1330-20-7	8260B	2.0	U	2.0	0.68	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-120		105	70-120
Toluene-d8		105	85-120		102	85-120
Bromofluorobenzene		98	75-120		101	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW
3/18/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW54IW-09D**
Date Sampled: **12/14/2009 1053**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-011**
Matrix: **Aqueous**

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 2136	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**2.4**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JLL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**7.6**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**270**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**1.4**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.34**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW54IW-09D**
Date Sampled: **12/14/2009 1053**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-011**
Matrix: **Aqueous**

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 2136	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**260**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**1.8**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW44IW-09D**
Date Sampled: **12/12/2009 1140**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-012**
Matrix: **Aqueous**

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1933	MZ		24299
2	5030B	8260B	1	12/27/2009 2033	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**1.6**	J	**1.0**	**0.027**	**ug/L**	**1** SSH
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	UJ ~~U~~	1.0	0.097	ug/L	1 CCH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**2.7**	J	**1.0**	**0.094**	**ug/L**	**1** SSH
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**210**	↓	**1.0**	**0.087**	**ug/L**	**1** ↓
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**1.5**	↓	**1.0**	**0.079**	**ug/L**	**1** ↓
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.72**	J ~~U~~	**1.0**	**0.17**	**ug/L**	**1** SSH
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

WJ
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW44IW-09D**
Date Sampled: **12/12/2009 1140**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-012**
Matrix: **Aqueous**

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1933	MZ		24299
2	5030B	8260B	1	12/27/2009 2033	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**110** J		**0.50**	**0.024**	**ug/L**	**1** SSH
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**24** J		**0.50**	**0.065**	**ug/L**	**1** SSH
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120	H	85	70-120
Toluene-d8	N	121	85-120	H	104	85-120
Bromofluorobenzene		111	75-120	H	97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WD
3/17/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-GW44IW-09D**
Date Sampled: **12/12/2009 1140**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-012**
Matrix: **Aqueous**

12RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1933	MZ		24299
2	5030B	8260B	1	12/27/2009 2033	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	**71-43-2**	**8260B**	**1.5 J**	**H**	**1.0**	**0.027**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	**75-35-4**	**8260B**	**2.4 J**	**H**	**1.0**	**0.094**	**ug/L**	**2**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**200 J**	**H**	**1.0**	**0.087**	**ug/L**	**2**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**2.2 J**	**H**	**1.0**	**0.079**	**ug/L**	**2**
1,2-Dichloropropane	78-87-5	8260B	0.50 UJ	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	**108-88-3**	**8260B**	**0.65 J**	**JH**	**1.0**	**0.17**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0 UJ	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW44IW-09D**
Date Sampled: **12/12/2009 1140**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-012**
Matrix: **Aqueous**

12RE

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1933	MZ		24299
2	5030B	8260B	1	12/27/2009 2033	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0 UJ	UH	1.0	0.031	ug/L	2 HT
Trichloroethene	**79-01-6**	**8260B**	**110 J**	**H**	**0.50**	**0.024**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	0.50 UJ	UH	0.50	0.051	ug/L	2
Vinyl chloride	**75-01-4**	**8260B**	**20 J**	**H**	**0.50**	**0.065**	**ug/L**	**2**
Xylenes (total)	1330-20-7	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120	H	85	70-120
Toluene-d8	N	121	85-120	H	104	85-120
Bromofluorobenzene		111	75-120	H	97	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW19DW-09D**
Date Sampled: **12/14/2009 1310**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2151	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1	ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1	CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1	CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1	CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1	CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	**127-18-4**	**8260B**	**2.4**		**1.0**	**0.014**	**ug/L**	**1**	
Toluene	**108-88-3**	**8260B**	**1.0**		**1.0**	**0.17**	**ug/L**	**1**	
1,1,2-Trichloro-1,2,2-Trifluoroethane	**76-13-1**	**8260B**	**0.52**	**J**	**1.0**	**0.30**	**ug/L**	**1**	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW19DW-09D**
Date Sampled: **12/14/2009 1310**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2151	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1955	MZ		24299
2	5030B	8260B	1	12/27/2009 2054	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	UJ ~~U~~	1.0	0.097	ug/L	1 CCH
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1955	MZ		24299
2	5030B	8260B	1	12/27/2009 2054	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-120	H	101	70-120
Toluene-d8	N	125	85-120	H	109	85-120
Bromofluorobenzene		111	75-120	H	101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-014**
Matrix: **Aqueous**

14RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1955	MZ		24299
2	5030B	8260B	1	12/27/2009 2054	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	71-43-2	8260B	1.0	UH	1.0	0.027	ug/L	2
Bromodichloromethane	75-27-4	8260B	0.50	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	UH	1.0	0.087	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	UH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-014**
Matrix: **Aqueous**

14RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/24/2009 1955	MZ		24299
2	5030B	8260B	1	12/27/2009 2054	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0 UJ	UH	1.0	0.031	ug/L	2 HT
Trichloroethene	79-01-6	8260B	0.50	UH	0.50	0.024	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	0.50	UH	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	UH	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	UH	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-120	H	101	70-120
Toluene-d8	N	125	85-120	H	109	85-120
Bromofluorobenzene		111	75-120	H	101	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121309**
Date Sampled: **12/13/2009 1725**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 2115	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**1.4**		**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

ll
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121309**
Date Sampled: **12/13/2009 1725**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 2115	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		110	85-120
Bromofluorobenzene		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW18DWD-09D**
Date Sampled: **12/15/2009 1715**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1153	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.31**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW18DWD-09D**
Date Sampled: **12/15/2009 1715**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1153	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-120
Toluene-d8		95	85-120
Bromofluorobenzene		90	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW48IW-09D**
Date Sampled: **12/16/2009 1045**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 2347	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**2.4**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.25**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**3.7**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**110**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**6.4**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW48IW-09D**
Date Sampled: **12/16/2009 1045**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 2347	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		77	70-120
Toluene-d8		91	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW31IW-09D**
Date Sampled: **12/16/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-018**
Matrix: **Aqueous**

18

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1459	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	1 HT
Benzene	71-43-2	8260B	1.0	UH	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	UH	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	1 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**4.2 J**	**JH**	**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**0.14 J**	**JH**	**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50 UJ	UH	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	1
Tetrachloroethene	**127-18-4**	**8260B**	**0.28 J**	**JH**	**1.0**	**0.014**	**ug/L**	**1**
Toluene	**108-88-3**	**8260B**	**0.19 J**	**JH**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0 UJ	UH	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UH	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/17/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW31IW-09D**
Date Sampled: **12/16/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17043-018**
Matrix: **Aqueous**

18

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1459	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**7.7** J	~~H~~	**0.50**	**0.024**	**ug/L**	**1** HT
Trichlorofluoromethane	75-69-4	8260B	0.50 UJ	~~UH~~	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	~~UH~~	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	~~UH~~	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	H	101	70-120
Toluene-d8	H	101	85-120
Bromofluorobenzene	H	98	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

LW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL17044

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 17, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-TB01121609	KL17044-001	Water
2	IR86-EB01121509	KL17044-002	Water
3	IR86-FB01121509	KL17044-003	Water
4	IR86-GW16IW-09D	KL17044-004	Water
5	IR86-GW15IW-09D	KL17044-005	Water
5MS	IR86-GW15IW-09DMS	KL17044-005MS	Water
5MSD	IR86-GW15IW-09DMSD	KL17044-005MSD	Water
5DL	IR86-GW15IW-09DDL	KL17044-005DL	Water
6	IR86-GW61-09D	KL17044-006	Water
6RE	IR86-GW61-09DRE	KL17044-006RE	Water
7	IR86-EB01121409	KL17044-007	Water
8	IR86-GW42IW-09D	KL17044-008	Water
8RE	IR86-GW42IW-09DRE	KL17044-008RE	Water
9	IR86-GW62-09D	KL17044-009	Water
10	IR86-GW40D-09D	KL17044-010	Water
11	IR86-GW16DW-09D	KL17044-011	Water
12	IR86-GW40-09D	KL17044-012	Water
13	IR86-GW61IW-09D	KL17044-013	Water
13RE	IR86-GW61IW-09DRE	KL17044-013RE	Water
14	IR86-GW62D-09D	KL17044-014	Water
15	SWMU318-GW05-09D	KL17044-015	Water
16	IR86-GW48-09D	KL17044-016	Water
17	IR86-GW22IW-09D	KL17044-017	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples except the following.

Sample ID	Date Sampled	Date Analyzed	# of Days	Qualifier
1	12/16/09	12/31/09	15	J/UJ

Sample ID	Date Sampled	Date Analyzed	# of Days	Qualifier
5DL	12/14/09	01/02/10	19	J/UJ
6RE	12/12/09	12/27/09	15	J/UJ
8RE	12/12/09	12/27/09	15	J/UJ
13RE	12/12/09	12/27/09	15	J/UJ

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
12/26/09	2-Butanone	0.040 RRF	J/R	6RE, 8RE, 13RE, 16, 17
12/29/09	2-Butanone	0.047 RRF	J/R	2, 3, 4, 15, 10, 11, 12, 5, 7, 9, 14
12/30/09	2-Butanone	0.037 RRF	J/R	1, 5DL

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/27/09	2-Butanone	0.039 RRF	None	See ICAL
12/28/09	2-Butanone	40.0%	None	See ICAL
	Methyl Acetate	30.4%	J/UJ	5, 7, 9, 14
	Cyclohexane	26.3%		
	1,2-Dibromo-3-chloropropane	50.3%		
	2-Hexanone	31.2%		
12/29/09	Dichlorodifluoromethane	25.6%	J/UJ	10, 11, 12
	Bromoform	32.6%		
	2-Butanone	0.043 RRF	None	See ICAL
01/01/10	2-Butanone	0.033 RRF	None	See ICAL

Surrogates - EDS Sample IDs 6, 8, and 13 were inadvertently not spiked with surrogate compounds, therefore all recoveries were 0%. No action was taken on this basis.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
5	1,2-Dichlorobenzene	122%	None - Sample ND

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 24501	Nine Compounds	High	None	All ND

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB02121609	None - ND	-	-	-	-
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121509	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW62-09D ug/L	IR86-GW62D-09D ug/L	RPD	Qualifier
Chloroform	0.44	0.42	5%	None

Compound	IR86-GW40-09D ug/L	IR86-GW40D-09D ug/L	RPD	Qualifier
1,1-Dichloroethane	0.30	0.35	15%	None
cis-1,2-Dichloroethene	1.6	1.4	13%	None
Trichloroethene	3.4	3.2	6%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - EDS Sample ID #5 exhibited cis-1,2-dichloroethene over the linear range of the instrument. The sample was diluted and reanalyzed and the dilution result for this compound should be used for reporting.

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01121609**
Date Sampled: **12/16/2009 1130**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1520	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	1 HT
Benzene	71-43-2	8260B	1.0	UH	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	UH	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	1 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	UH	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	UH	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	UH	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	UH	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UH	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW 3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-TB01121609**
Date Sampled: **12/16/2009 1130**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1520	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	UJ UH	0.50	0.024	ug/L	1 HT
Trichlorofluoromethane	75-69-4	8260B	0.50	UH	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	UH	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	UH	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	H	108	70-120
Toluene-d8	H	104	85-120
Bromofluorobenzene	H	101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

ew
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121509**
Date Sampled: **12/15/2009 1700**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1235	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121509**
Date Sampled: **12/15/2009 1700**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1235	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		84	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01121509**
Date Sampled: **12/15/2009 1730**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1256	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCC
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

kw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01121509**
Date Sampled: **12/15/2009 1730**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1256	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		86	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW16IW-09D**
Date Sampled: **12/15/2009 1555**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1317	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.25**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**3.3**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.17**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW16IW-09D**
Date Sampled: **12/15/2009 1555**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-004**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1317	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**3.8**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		85	70-120
Toluene-d8		94	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW15IW-09D**
Date Sampled: **12/14/2009 1000**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2212	RRH		24501
2	5030B	8260B	2	01/02/2010 0251	DLB		24692

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**4.0**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	350 ~~450~~		2.0 ~~1.0~~	0.17 ~~0.087~~	**ug/L**	2 ✓
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**10**		**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.31**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW15IW-09D**
Date Sampled: **12/14/2009 1000**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-005**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2212	RRH		24501
2	5030B	8260B	2	01/02/2010 0251	DLB		24692

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-120	H	104	70-120
Toluene-d8		104	85-120	H	106	85-120
Bromofluorobenzene		101	75-120	H	100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

QCV
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW15IW-09D**
Date Sampled: **12/14/2009 1000**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-005**
Matrix: **Aqueous**

5DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2212	RRH		24501
2	5030B	8260B	2	01/02/2010 0251	DLB		24692

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	20	UJ ~~UH~~	20	6.6	ug/L	2 HT
Benzene	**71-43-2**	**8260B**	**4.1**	**J ~~H~~**	**2.0**	**0.054**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	1.0	UJ UH	1.0	0.34	ug/L	2
Bromoform	75-25-2	8260B	2.0	UH	2.0	0.020	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	2.0	UH	2.0	0.41	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	20	R ~~UH~~	20	4.1	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	2.0	UJ UH	2.0	0.19	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	1.0	UH	1.0	0.17	ug/L	2
Chlorobenzene	108-90-7	8260B	2.0	UH	2.0	0.34	ug/L	2
Chloroethane	75-00-3	8260B	2.0	UH	2.0	0.34	ug/L	2
Chloroform	67-66-3	8260B	2.0	UH	2.0	0.34	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	2.0	UH	2.0	0.35	ug/L	2
Cyclohexane	110-82-7	8260B	2.0	UH	2.0	0.60	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	1.0	UH	1.0	0.14	ug/L	2
Dibromochloromethane	124-48-1	8260B	1.0	UH	1.0	0.34	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	1.0	UH	1.0	0.12	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	2.0	UH	2.0	0.34	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	2.0	UH	2.0	0.34	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	2.0	UH	2.0	0.34	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	2.0	UH	2.0	0.14	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	2.0	UH	2.0	0.11	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	1.0	UH	1.0	0.047	ug/L	2
1,1-Dichloroethene	**75-35-4**	**8260B**	**3.2**	**J H**	**2.0**	**0.19**	**ug/L**	**2**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**350**	**H**	**2.0**	**0.17**	**ug/L**	**2**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**9.5**	**H**	**2.0**	**0.16**	**ug/L**	**2**
1,2-Dichloropropane	78-87-5	8260B	1.0	UJ UH	1.0	0.16	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	1.0	UH	1.0	0.18	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	1.0	UH	1.0	0.36	ug/L	2
Ethylbenzene	100-41-4	8260B	2.0	UH	2.0	0.34	ug/L	2
2-Hexanone	591-78-6	8260B	10	UH	10	0.55	ug/L	2
Isopropylbenzene	98-82-8	8260B	2.0	UH	2.0	0.058	ug/L	2
Methyl acetate	79-20-9	8260B	2.0	UH	2.0	0.60	ug/L	2
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.5**	**J UH**	**2.0**	**0.038**	**ug/L**	**2**
4-Methyl-2-pentanone	108-10-1	8260B	10	UJ UH	10	0.62	ug/L	2
Methylcyclohexane	108-87-2	8260B	10	UH	10	1.9	ug/L	2
Methylene chloride	75-09-2	8260B	2.0	UH	2.0	0.34	ug/L	2
Styrene	100-42-5	8260B	2.0	UH	2.0	0.030	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	1.0	UH	1.0	0.026	ug/L	2
Tetrachloroethene	127-18-4	8260B	2.0	UH	2.0	0.029	ug/L	2
Toluene	**108-88-3**	**8260B**	**1.1**	**J JH**	**2.0**	**0.34**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	2.0	UJ UH	2.0	0.60	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	1.0	UH	1.0	0.34	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	2.0	UH	2.0	0.058	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW15IW-09D**
Date Sampled: **12/14/2009 1000**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-005**
Matrix: **Aqueous**

5DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2212	RRH		24501
2	5030B	8260B	2	01/02/2010 0251	DLB		24692

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	2.0	UJ UH	2.0	0.062	ug/L	2 HT
Trichloroethene	79-01-6	8260B	1.0	UH	1.0	0.049	ug/L	2
Trichlorofluoromethane	75-69-4	8260B	1.0	UH	1.0	0.10	ug/L	2
Vinyl chloride	**75-01-4**	**8260B**	**76**	**J H**	**1.0**	**0.13**	**ug/L**	**2**
Xylenes (total)	1330-20-7	8260B	1.0	UJ UH	1.0	0.34	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-120	H	104	70-120
Toluene-d8		104	85-120	H	106	85-120
Bromofluorobenzene		101	75-120	H	100	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2303	MZ		24304
2	5030B	8260B	1	12/27/2009 1456	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**1.0**		**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**0.77**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**4.0**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**79**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-006**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2303	MZ		24304
2	5030B	8260B	1	12/27/2009 1456	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**260**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	97	70-120
Toluene-d8	N	0.00	85-120	H	107	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-006**
Matrix: **Aqueous**

bRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2303	MZ		24304
2	5030B	8260B	1	12/27/2009 1456	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	**71-43-2**	**8260B**	**0.88 J**	**JH**	**1.0**	**0.027**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 JCL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	**67-66-3**	**8260B**	**0.74 J**	**JH**	**1.0**	**0.17**	**ug/L**	**2**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0 UJ	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	**75-35-4**	**8260B**	**3.1 J**	**JH**	**1.0**	**0.094**	**ug/L**	**2**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**72 J**	**JH**	**1.0**	**0.087**	**ug/L**	**2**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0 UJ	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	UH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61-09D**
Date Sampled: **12/12/2009 1605**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-006**
Matrix: **Aqueous**

bRE

use original

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2303	MZ		24304
2	5030B	8260B	1	12/27/2009 1456	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	UJ ~~UH~~	1.0	0.031	ug/L	2 HT
Trichloroethene	**79-01-6**	**8260B**	**210**	**J ~~H~~**	**0.50**	**0.024**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	0.50	UJ ~~UH~~	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	~~UH~~	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	~~UH~~	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	97	70-120
Toluene-d8	N	0.00	85-120	H	107	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

Exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2233	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121409**
Date Sampled: **12/14/2009 1740**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-007**
Matrix: **Aqueous**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2233	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-120
Toluene-d8		107	85-120
Bromofluorobenzene		104	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW42IW-09D**
Date Sampled: **12/12/2009 1500**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2324	MZ		24304
2	5030B	8260B	1	12/27/2009 1517	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.70**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**1.1**		**1.0**	**0.094**	**ug/L**	**1**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**63**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	**156-60-5**	**8260B**	**0.46**	**J**	**1.0**	**0.079**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**1.1**		**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

LW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW42IW-09D**
Date Sampled: **12/12/2009 1500**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-008**
Matrix: **Aqueous**

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2324	MZ		24304
2	5030B	8260B	1	12/27/2009 1517	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**330**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**3.5**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	95	70-120
Toluene-d8	N	0.00	85-120	H	106	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/16/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-GW42IW-09D**
Date Sampled: **12/12/2009 1500**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-008**
Matrix: **Aqueous**

8RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2324	MZ		24304
2	5030B	8260B	1	12/27/2009 1517	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	**71-43-2**	**8260B**	**0.59 J**	**JH**	**1.0**	**0.027**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 JEL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	67-66-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.79 J**	**JH**	**1.0**	**0.094**	**ug/L**	**2**
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**55 J**	**H**	**1.0**	**0.087**	**ug/L**	**2**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0 UJ	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	**108-88-3**	**8260B**	**1.0 J**	**H**	**1.0**	**0.17**	**ug/L**	**2**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0 UJ	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **IR86-GW42IW-09D**
Date Sampled: **12/12/2009 1500**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-008**
Matrix: **Aqueous**

8RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2324	MZ		24304
2	5030B	8260B	1	12/27/2009 1517	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0 UJ	UH	1.0	0.031	ug/L	2
Trichloroethene	**79-01-6**	**8260B**	**260 J**	**H**	**0.50**	**0.024**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	0.50 UJ	UH	0.50	0.051	ug/L	2
Vinyl chloride	**75-01-4**	**8260B**	**2.8 J**	**H**	**0.50**	**0.065**	**ug/L**	**2**
Xylenes (total)	1330-20-7	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2

HT

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	95	70-120
Toluene-d8	N	0.00	85-120	H	106	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2255	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**0.44**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62-09D**
Date Sampled: **12/14/2009 1535**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-009**
Matrix: **Aqueous**

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2255	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-120
Toluene-d8		106	85-120
Bromofluorobenzene		103	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

fcW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW40D-09D**
Date Sampled: **12/15/2009 1110**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1748	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.35**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**1.4**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW40D-09D**
Date Sampled: **12/15/2009 1110**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-010**
Matrix: **Aqueous**

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1748	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**3.2**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-120
Toluene-d8		92	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW16DW-09D**
Date Sampled: **12/15/2009 1250**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-011**
Matrix: **Aqueous**

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1809	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CCH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	**108-88-3**	**8260B**	**0.37**	**J**	**1.0**	**0.17**	**ug/L**	**1**
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

dlw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW16DW-09D**
Date Sampled: **12/15/2009 1250**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-011**
Matrix: **Aqueous**

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1809	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		85	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		90	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

JW 3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW40-09D**
Date Sampled: **12/15/2009 1105**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-012**
Matrix: **Aqueous**

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1830	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	UJ ~~U~~	1.0	0.010	ug/L	1 CEH
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	UJ ~~U~~	1.0	0.071	ug/L	1 CCH
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.30**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**1.6**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW40-09D**
Date Sampled: **12/15/2009 1105**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-012**
Matrix: **Aqueous**

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1830	RRH		24662

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**3.4**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-120
Toluene-d8		92	85-120
Bromofluorobenzene		89	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2344	MZ		24304
2	5030B	8260B	1	12/27/2009 1538	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.27**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	U	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**0.98**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**4.4**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-013**
Matrix: **Aqueous**

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2344	MZ		24304
2	5030B	8260B	1	12/27/2009 1538	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**1.2**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	92	70-120
Toluene-d8	N	0.00	85-120	H	109	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-013**
Matrix: **Aqueous**

BRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2344	MZ		24304
2	5030B	8260B	1	12/27/2009 1538	MZ		24306

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	UH	10	3.3	ug/L	2 HT
Benzene	**71-43-2**	**8260B**	**0.24 J**	**JH**	**1.0**	**0.027**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	0.50 UJ	UH	0.50	0.17	ug/L	2
Bromoform	75-25-2	8260B	1.0	UH	1.0	0.010	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	UH	1.0	0.20	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	10 R	UH	10	2.0	ug/L	2 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	UH	1.0	0.097	ug/L	2 HT
Carbon tetrachloride	56-23-5	8260B	0.50	UH	0.50	0.085	ug/L	2
Chlorobenzene	108-90-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroethane	75-00-3	8260B	1.0	UH	1.0	0.17	ug/L	2
Chloroform	**67-66-3**	**8260B**	**0.87 J**	**JH**	**1.0**	**0.17**	**ug/L**	**2**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0 UJ	UH	1.0	0.17	ug/L	2
Cyclohexane	110-82-7	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UH	0.50	0.069	ug/L	2
Dibromochloromethane	124-48-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	UH	0.50	0.061	ug/L	2
1,2-Dichlorobenzene	541-73-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,3-Dichlorobenzene	95-50-1	8260B	1.0	UH	1.0	0.17	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	1.0	UH	1.0	0.17	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	1.0	UH	1.0	0.071	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	1.0	UH	1.0	0.054	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	0.50	UH	0.50	0.023	ug/L	2
1,1-Dichloroethene	75-35-4	8260B	1.0	UH	1.0	0.094	ug/L	2
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**3.9 J**	**H**	**1.0**	**0.087**	**ug/L**	**2**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0 UJ	UH	1.0	0.079	ug/L	2
1,2-Dichloropropane	78-87-5	8260B	0.50	UH	0.50	0.081	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	UH	0.50	0.090	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	UH	0.50	0.18	ug/L	2
Ethylbenzene	100-41-4	8260B	1.0	UH	1.0	0.17	ug/L	2
2-Hexanone	591-78-6	8260B	5.0	UH	5.0	0.27	ug/L	2
Isopropylbenzene	98-82-8	8260B	1.0	UH	1.0	0.029	ug/L	2
Methyl acetate	79-20-9	8260B	1.0	UH	1.0	0.30	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	UH	1.0	0.019	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	5.0	UH	5.0	0.31	ug/L	2
Methylcyclohexane	108-87-2	8260B	5.0	UH	5.0	0.95	ug/L	2
Methylene chloride	75-09-2	8260B	1.0	UH	1.0	0.17	ug/L	2
Styrene	100-42-5	8260B	1.0	UH	1.0	0.015	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	UH	0.50	0.013	ug/L	2
Tetrachloroethene	127-18-4	8260B	1.0	UH	1.0	0.014	ug/L	2
Toluene	108-88-3	8260B	1.0	UH	1.0	0.17	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	UH	1.0	0.30	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	UH	0.50	0.17	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	1.0	UH	1.0	0.029	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

pcw
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61IW-09D**
Date Sampled: **12/12/2009 1240**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-013**
Matrix: **Aqueous**

13RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/26/2009 2344	MZ		24304
2	5030B	8260B	1	12/27/2009 1538	MZ		24306

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260B	1.0 UJ	UH	1.0	0.031	ug/L	2 HT
Trichloroethene	**79-01-6**	**8260B**	**0.89 J**	**H**	**0.50**	**0.024**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	0.50 UJ	UH	0.50	0.051	ug/L	2
Vinyl chloride	75-01-4	8260B	0.50	UH	0.50	0.065	ug/L	2
Xylenes (total)	1330-20-7	8260B	0.50	UH	0.50	0.17	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	0.00	70-120	H	92	70-120
Toluene-d8	N	0.00	85-120	H	109	85-120
Bromofluorobenzene	N	0.00	75-120	H	101	75-120

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2316	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	**67-66-3**	**8260B**	**0.42**	**J**	**1.0**	**0.17**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	UJ ~~U~~	0.50	0.069	ug/L	1 CCH
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	UJ ~~U~~	5.0	0.27	ug/L	1 CCH
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	UJ ~~U~~	1.0	0.30	ug/L	1 CCH
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

pLW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW62D-09D**
Date Sampled: **12/14/2009 1540**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-014**
Matrix: **Aqueous**

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/28/2009 2316	RRH		24501

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW
3/16/10

Volatile Organic Compounds by 8260B

Client: **CH2M HILL, Inc.**
Description: **SWMU318-GW05-09D**
Date Sampled: **12/15/2009 0925**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1338	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**0.83**	**J**	**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **SWMU318-GW05-09D**
Date Sampled: **12/15/2009 0925**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-015**
Matrix: **Aqueous**

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/29/2009 1338	RRH		24502

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.53**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		90	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW48-09D**
Date Sampled: **12/13/2009 1257**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1414	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.86**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	**110-82-7**	**8260B**	**4.7**		**1.0**	**0.30**	**ug/L**	**1**
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.67**	**J**	**1.0**	**0.054**	**ug/L**	**1**
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**1.5**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW48-09D**
Date Sampled: **12/13/2009 1257**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-016**
Matrix: **Aqueous**

16

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1414	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**0.56**		**0.50**	**0.024**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-120
Toluene-d8		105	85-120
Bromofluorobenzene		108	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW22IW-09D**
Date Sampled: **12/13/2009 1550**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1435	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	**71-43-2**	**8260B**	**0.32**	**J**	**1.0**	**0.027**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 IEL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**4.0**		**1.0**	**0.087**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lw 3/16/10

Volatile Organic Compounds by GC/MS

Client: **CH2M HILL, Inc.**
Description: **IR86-GW22IW-09D**
Date Sampled: **12/13/2009 1550**
Date Received: **12/17/2009**

Laboratory ID: **KL17044-017**
Matrix: **Aqueous**

17

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/27/2009 1435	MZ		24306

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**22**		**0.50**	**0.065**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-120
Toluene-d8		104	85-120
Bromofluorobenzene		101	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL22010

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW61DW-09D	KL22010-001	Water
2	IR86-GW59DW-09D	KL22010-002	Water
2MS	IR86-GW59DW-09DMS	KL22010-002MS	Water
2MSD	IR86-GW59DW-09DMSD	KL22010-002MSD	Water
3	IR86-GW60-09D	KL22010-003	Water
4	IR86-EB01121809	KL22010-005	Water
5	IR86-EB02121809	KL22010-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 180 days for all metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
Antimony	0.0063	0.0315	None	All ND
Arsenic	0.0030	0.0150	U	1, 4

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-EB01121809	None - ND	-	-	-	-
IR86-EB02121809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values except the following.

MS/MSD ID	Compound	MS/MSD %R/RPD	Qualifier	Affected Samples
2	Potassium	121%/Ok/Ok	J	1, 2, 3
	Sodium	142%/124%/Ok	J	1, 2, 3

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/05/2010 1808	KJC	01/04/2010 1730	24633

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	0.13	J	0.20	0.060	mg/L	1	
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Arsenic	7440-38-2	6010C	0.010 ~~0.0040~~	U ~~BJ~~	0.010	0.0030	mg/L	1	MBL
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1	
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Calcium	7440-70-2	6010C	39		5.0	1.6	mg/L	1	
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Iron	7439-89-6	6010C	1.1		0.10	0.030	mg/L	1	
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1	
Magnesium	7439-95-4	6010C	10		5.0	1.6	mg/L	1	
Manganese	7439-96-5	6010C	0.022		0.015	0.0049	mg/L	1	
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Potassium	7440-09-7	6010C	21 J		5.0	1.6	mg/L	1	MSH
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Sodium	7440-23-5	6010C	300 J		5.0	1.6	mg/L	1	MSH
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
2/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/05/2010 1812	KJC	01/04/2010 1730	24633

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1	
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Barium	7440-39-3	6010C	0.019	J	0.020	0.0080	mg/L	1	
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Calcium	7440-70-2	6010C	39		5.0	1.6	mg/L	1	
Chromium	7440-47-3	6010C	0.076		0.0050	0.0016	mg/L	1	
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Copper	7440-50-8	6010C	0.0018	J	0.0050	0.0016	mg/L	1	
Iron	7439-89-6	6010C	0.32		0.10	0.030	mg/L	1	
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1	
Magnesium	7439-95-4	6010C	6.2		5.0	1.6	mg/L	1	
Manganese	7439-96-5	6010C	0.016		0.015	0.0049	mg/L	1	
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Potassium	7440-09-7	6010C	34 J		5.0	1.6	mg/L	1	MSH
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Sodium	7440-23-5	6010C	210 J		5.0	1.6	mg/L	1	MSH
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/05/2010 1827	KJC	01/04/2010 1730	24633

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1	
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1	
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Barium	7440-39-3	6010C	0.045		0.020	0.0080	mg/L	1	
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1	
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1	
Calcium	7440-70-2	6010C	290		5.0	1.6	mg/L	1	
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1	
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1	
Copper	7440-50-8	6010C	0.0030	J	0.0050	0.0016	mg/L	1	
Iron	7439-89-6	6010C	8.2		0.10	0.030	mg/L	1	
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1	
Magnesium	7439-95-4	6010C	6.9		5.0	1.6	mg/L	1	
Manganese	7439-96-5	6010C	0.14		0.015	0.0049	mg/L	1	
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1	
Potassium	7440-09-7	6010C	2.4	J ~~B~~	5.0	1.6	mg/L	1	MSH
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1	
Silver	7440-22-4	6010C	0.0021	J	0.0050	0.0016	mg/L	1	
Sodium	7440-23-5	6010C	14	J	5.0	1.6	mg/L	1	MSH
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1	
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1	
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/05/2010 1842	KJC	01/04/2010 1730	24633

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010 ~~0.0052~~	U ~~B~~	0.010	0.0030	mg/L	1 MDL
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MM 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/05/2010 1846	KJC	01/04/2010 1730	24633

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/16/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL22010

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW61DW-09D	KL22010-001	Water
2	IR86-GW59DW-09D	KL22010-002	Water
3	IR86-GW60-09D	KL22010-003	Water
4	IR86-EB01121809	KL22010-005	Water
5	IR86-EB02121809	KL22010-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS5-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121809	Acenaphthylene	0.23	1.15	U	3
IR86-EB02121809	Acenaphthylene	0.21	1.05	None	See EB01
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/17/2010 1436	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.22	U	0.22	0.027	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.069	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.027	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.044	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.056	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.033	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		55	20-150
Fluoranthene-d10		71	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/18/2010 2141	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	J	0.21	0.021	ug/L	1 ISL
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.38	J	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.46	J	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.31	J	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.55	J	0.21	0.042	ug/L	1 ISL
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.45	J	0.21	0.053	ug/L	1 ISL
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.032	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		64	20-150
Fluoranthene-d10		62	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/05/2010 0227	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.27	U	0.22	0.027	ug/L	1 EBL
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.13	J	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.070	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.027	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.045	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.12	J	0.22	0.025	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.056	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.034	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		71	20-150
Fluoranthene-d10		68	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/05/2010 0252	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.23		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		68	20-150
Fluoranthene-d10		68	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/05/2010 0317	GLR	12/22/2009 2155	24123

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21		0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.12	J	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		56	20-150
Fluoranthene-d10		64	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW
3/16/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL22010

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW61DW-09D	KL22010-001	Water
1RE**	IR86-GW61DW-09DRE	KL22010-001RE	Water
2	IR86-GW59DW-09D	KL22010-002	Water
3	IR86-GW60-09D	KL22010-003	Water
4	IR86-EB01121809	KL22010-005	Water
4RE	IR86-EB01121809RE	KL22010-005RE	Water
5	IR86-EB02121809	KL22010-006	Water
5RE	IR86-EB02121809RE	KL22010-006RE	Water

* - Pesticides ** - PCBs

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
1RE (PCB)	12/18/09	01/18/10	31	J/R
4RE (PCB)	12/18/09	01/10/10	23	J/R
5RE (PCB)	12/18/09	01/10/10	23	J/R
4RE (Pest)	12/18/09	01/02/10	15	J/R
5RE (Pest)	12/18/09	01/02/10	15	J/R

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - The samples exhibited acceptable surrogate %R values except the following.

Pesticides			
Sample ID	Surrogate	%R	Qualifier
4	DCB	28%	J/UJ
5	DCB	27%	J/UJ

PCBs			
Sample ID	Surrogate	%R	Qualifier
1	DCB	39%	J/UJ
4	DCB	34%	J/UJ
4RE	DCB	37%	None - See HT
5	DCB	34%	J/UJ
5RE	DCB	19%	None - See HT

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01121409	None - ND	-	-	-	-
IR86-EB01121109	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-
IR86-FB01-120809	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - All criteria were met.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61DW-09D**
Date Sampled: **12/18/2009 1225**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1620	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0022	U	0.027	0.0022	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.0055	U	0.027	0.0055	ug/L	1
alpha-BHC	319-84-6	8081B	0.0033	U	0.027	0.0033	ug/L	1
beta-BHC	319-85-7	8081B	0.021	U	0.027	0.021	ug/L	1
delta-BHC	319-86-8	8081B	0.0088	U	0.027	0.0088	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.0033	U	0.027	0.0033	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.0033	U	0.027	0.0033	ug/L	1
4,4'-DDD	72-54-8	8081B	0.0066	U	0.027	0.0066	ug/L	1
4,4'-DDE	72-55-9	8081B	0.0066	U	0.027	0.0066	ug/L	1
4,4'-DDT	50-29-3	8081B	0.0033	U	0.027	0.0033	ug/L	1
Dieldrin	60-57-1	8081B	0.0044	U	0.027	0.0044	ug/L	1
Endosulfan I	959-98-8	8081B	0.0066	U	0.027	0.0066	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.0033	U	0.027	0.0033	ug/L	1
Endrin	72-20-8	8081B	0.0055	U	0.027	0.0055	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.0033	U	0.027	0.0033	ug/L	1
Endrin ketone	53494-70-5	8081B	0.0044	U	0.027	0.0044	ug/L	1
Heptachlor	76-44-8	8081B	0.022	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.0033	U	0.027	0.0033	ug/L	1
Methoxychlor	72-43-5	8081B	0.015	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.033	U	0.27	0.033	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		32	30-135
Tetrachloro-m-xylene		90	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59DW-09D**
Date Sampled: **12/18/2009 1345**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1636	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0022	U	0.027	0.0022	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.0054	U	0.027	0.0054	ug/L	1
alpha-BHC	319-84-6	8081B	0.0032	U	0.027	0.0032	ug/L	1
beta-BHC	319-85-7	8081B	0.020	U	0.027	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.0086	U	0.027	0.0086	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.0032	U	0.027	0.0032	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.0032	U	0.027	0.0032	ug/L	1
4,4'-DDD	72-54-8	8081B	0.0065	U	0.027	0.0065	ug/L	1
4,4'-DDE	72-55-9	8081B	0.0065	U	0.027	0.0065	ug/L	1
4,4'-DDT	50-29-3	8081B	0.0032	U	0.027	0.0032	ug/L	1
Dieldrin	60-57-1	8081B	0.0043	U	0.027	0.0043	ug/L	1
Endosulfan I	959-98-8	8081B	0.0065	U	0.027	0.0065	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.0032	U	0.027	0.0032	ug/L	1
Endrin	72-20-8	8081B	0.0054	U	0.027	0.0054	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.0032	U	0.027	0.0032	ug/L	1
Endrin ketone	53494-70-5	8081B	0.0043	U	0.027	0.0043	ug/L	1
Heptachlor	76-44-8	8081B	0.022	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.0032	U	0.027	0.0032	ug/L	1
Methoxychlor	72-43-5	8081B	0.015	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.032	U	0.27	0.032	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		47	30-135
Tetrachloro-m-xylene		88	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-GW60-09D**
Date Sampled: **12/18/2009 1730**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1651	ASB	12/23/2009 2301	24187

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0022	U	0.027	0.0022	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.0054	U	0.027	0.0054	ug/L	1
alpha-BHC	319-84-6	8081B	0.0033	U	0.027	0.0033	ug/L	1
beta-BHC	319-85-7	8081B	0.021	U	0.027	0.021	ug/L	1
delta-BHC	319-86-8	8081B	0.0087	U	0.027	0.0087	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.0033	U	0.027	0.0033	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.0033	U	0.027	0.0033	ug/L	1
4,4'-DDD	72-54-8	8081B	0.0065	U	0.027	0.0065	ug/L	1
4,4'-DDE	72-55-9	8081B	0.0065	U	0.027	0.0065	ug/L	1
4,4'-DDT	50-29-3	8081B	0.0033	U	0.027	0.0033	ug/L	1
Dieldrin	60-57-1	8081B	0.0043	U	0.027	0.0043	ug/L	1
Endosulfan I	959-98-8	8081B	0.0065	U	0.027	0.0065	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.0033	U	0.027	0.0033	ug/L	1
Endrin	72-20-8	8081B	0.0054	U	0.027	0.0054	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.0033	U	0.027	0.0033	ug/L	1
Endrin ketone	53494-70-5	8081B	0.0043	U	0.027	0.0043	ug/L	1
Heptachlor	76-44-8	8081B	0.022	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.0033	U	0.027	0.0033	ug/L	1
Methoxychlor	72-43-5	8081B	0.015	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.033	U	0.27	0.033	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		37	30-135
Tetrachloro-m-xylene		87	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121809**
Date Sampled: **12/18/2009 1800**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-005**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1707	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/06/2010 0037	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0020 UJ	U	0.025	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.0050	U	0.025	0.0050	ug/L	1
alpha-BHC	319-84-6	8081B	0.0030	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.019	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.0080	U	0.025	0.0080	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.0030	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.0030	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.0060	U	0.025	0.0060	ug/L	1
4,4'-DDE	72-55-9	8081B	0.0060	U	0.025	0.0060	ug/L	1
4,4'-DDT	50-29-3	8081B	0.0030	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.0040	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.0060	U	0.025	0.0060	ug/L	1
Endosulfan II	33213-65-9	8081B	0.024	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.0030	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.0050	U	0.025	0.0050	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.0030	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.0040	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.020	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.0030	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.014	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.030	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	28	30-135	H	45	30-135
Tetrachloro-m-xylene		92	25-140	H	90	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121809**
Date Sampled: **12/18/2009 1800**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-005**
Matrix: **Aqueous**

4 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1707	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/06/2010 0037	NCM	01/02/2010 1523	24573

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0020	R UH	0.025	0.0020	ug/L	2 HT
gamma-BHC (Lindane)	58-89-9	8081B	0.0051	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.0030	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.019	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.0081	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.0030	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.0030	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.0061	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.0061	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.0040	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.0061	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.024	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.0051	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.0040	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.020	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.014	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.030	UH	0.25	0.030	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

kw 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB02121809**
Date Sampled: **12/18/2009 1830**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-006**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1723	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/06/2010 0057	NCM	01/02/2010 1523	24573

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0020	UJ ~~U~~	0.025	0.0020	ug/L	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	0.0051	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.0030	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.019	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.0081	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.0030	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.0030	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.0061	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.0061	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.0030	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.0040	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.0061	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.024	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.0030	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.0051	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.0030	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.0040	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.020	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.0030	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.014	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.030	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits
Decachlorobiphenyl	N	27	30-135	H	39	30-135
Tetrachloro-m-xylene		89	25-140	H	88	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW 3/17/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-EB02121809**
Date Sampled: **12/18/2009 1830**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-006**
Matrix: **Aqueous**

SRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	12/30/2009 1723	ASB	12/23/2009 2301	24187
2	3520C	8081B	1	01/06/2010 0057	NCM	01/02/2010 1523	24573

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.0020	UH	0.025	0.0020	ug/L	2
gamma-BHC (Lindane)	58-89-9	8081B	0.0051	UH	0.025	0.0051	ug/L	2
alpha-BHC	319-84-6	8081B	0.0030	UH	0.025	0.0030	ug/L	2
beta-BHC	319-85-7	8081B	0.019	UH	0.025	0.019	ug/L	2
delta-BHC	319-86-8	8081B	0.0081	UH	0.025	0.0081	ug/L	2
alpha-Chlordane	5103-71-9	8081B	0.0030	UH	0.025	0.0030	ug/L	2
gamma-Chlordane	5103-74-2	8081B	0.0030	UH	0.025	0.0030	ug/L	2
4,4'-DDD	72-54-8	8081B	0.0061	UH	0.025	0.0061	ug/L	2
4,4'-DDE	72-55-9	8081B	0.0061	UH	0.025	0.0061	ug/L	2
4,4'-DDT	50-29-3	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Dieldrin	60-57-1	8081B	0.0040	UH	0.025	0.0040	ug/L	2
Endosulfan I	959-98-8	8081B	0.0061	UH	0.025	0.0061	ug/L	2
Endosulfan II	33213-65-9	8081B	0.024	UH	0.025	0.024	ug/L	2
Endosulfan sulfate	1031-07-8	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Endrin	72-20-8	8081B	0.0051	UH	0.025	0.0051	ug/L	2
Endrin aldehyde	7421-93-4	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Endrin ketone	53494-70-5	8081B	0.0040	UH	0.025	0.0040	ug/L	2
Heptachlor	76-44-8	8081B	0.020	UH	0.025	0.020	ug/L	2
Heptachlor epoxide	1024-57-3	8081B	0.0030	UH	0.025	0.0030	ug/L	2
Methoxychlor	72-43-5	8081B	0.014	UH	0.10	0.014	ug/L	2
Toxaphene	8001-35-2	8081B	0.030	UH	0.25	0.030	ug/L	2

B HT

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61DW-09D**
Date Sampled: **12/18/2009 1225**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-001**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 1944	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/20/2010 2025	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.055	UJ U	0.27	0.055	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.15	U	0.55	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.22	U	0.66	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.15	U	0.55	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.16	U	0.55	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.12	U	0.55	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.066	U	0.27	0.066	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	39	40-135	H	78	40-135
Tetrachloro-m-xylene		121	44-130	H	92	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW 3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW61DW-09D**
Date Sampled: **12/18/2009 1225**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-001**
Matrix: **Aqueous**

1 RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 1944	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/20/2010 2025	NCM	01/18/2010 2215	25553

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.053	R UH	0.27	0.053	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.15	UH	0.53	0.15	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.21	UH	0.64	0.21	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.15	UH	0.53	0.15	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.16	UH	0.53	0.16	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.12	UH	0.53	0.12	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.064	UH	0.27	0.064	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	39	40-135	H	78	40-135
Tetrachloro-m-xylene		121	44-130	H	92	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

PCB Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-GW59DW-09D**
Date Sampled: **12/18/2009 1345**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-002**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 1957	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.054	U	0.27	0.054	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.15	U	0.54	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.22	U	0.65	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.15	U	0.54	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.16	U	0.54	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.12	U	0.54	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.065	U	0.27	0.065	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		63	40-135
Tetrachloro-m-xylene		120	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-GW60-09D**
Date Sampled: **12/18/2009 1730**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-003**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 2010	NCM	12/23/2009 2301	24188

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.054	U	0.27	0.054	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.15	U	0.54	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.22	U	0.65	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.15	U	0.54	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.16	U	0.54	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.12	U	0.54	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.065	U	0.27	0.065	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		48	40-135
Tetrachloro-m-xylene		116	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121809**
Date Sampled: **12/18/2009 1800**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-005**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 2022	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/14/2010 1434	NCM	01/10/2010 1012	24988

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.050 UJ	U	0.25	0.050	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.14	U	0.50	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.20	U	0.60	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.14	U	0.50	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.15	U	0.50	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.11	U	0.50	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.060	U	0.25	0.060	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/17/10

PCB Aroclors

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01121809**
Date Sampled: **12/18/2009 1800**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-005**
Matrix: **Aqueous**

4RE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 2022	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/14/2010 1434	NCM	01/10/2010 1012	24988

Use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.051 R	UH	0.26	0.051	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.14	UH	0.51	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.20	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.14	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.15	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.11	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.061	UH	0.26	0.061	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	34	40-135	HN	37	40-135
Tetrachloro-m-xylene		118	44-130	H	112	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
3/17/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB02121809**
Date Sampled: **12/18/2009 1830**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-006**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 2035	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/14/2010 1446	NCM	01/10/2010 1012	24988

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.051	UJ U	0.25	0.051	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.14	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.20	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.14	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.15	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.11	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.061	U	0.25	0.061	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/12/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB02121809**
Date Sampled: **12/18/2009 1830**
Date Received: **12/22/2009**

Laboratory ID: **KL22010-006**
Matrix: **Aqueous**

SRE

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/08/2010 2035	NCM	12/23/2009 2301	24188
2	3520C	8082A	1	01/14/2010 1446	NCM	01/10/2010 1012	24988

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.051	R UH	0.25	0.051	ug/L	2 HT
Aroclor 1221	11104-28-2	8082A	0.14	UH	0.51	0.14	ug/L	2
Aroclor 1232	11141-16-5	8082A	0.20	UH	0.61	0.20	ug/L	2
Aroclor 1242	53469-21-9	8082A	0.14	UH	0.51	0.14	ug/L	2
Aroclor 1248	12672-29-6	8082A	0.15	UH	0.51	0.15	ug/L	2
Aroclor 1254	11097-69-1	8082A	0.11	UH	0.51	0.11	ug/L	2
Aroclor 1260	11096-82-5	8082A	0.061	UH	0.25	0.061	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	34	40-135	HN	19	40-135
Tetrachloro-m-xylene		120	44-130	H	115	44-130

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/17/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL22010

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW61DW-09D	KL22010-001	Water
2	IR86-GW59DW-09D	KL22010-002	Water
2RE	IR86-GW59DW-09DRE	KL22010-002RE	Water
3	IR86-GW60-09D	KL22010-003	Water
4	IR86-EB01121809	KL22010-005	Water
5	IR86-EB02121809	KL22010-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample ID	Date Sampled	Date Extracted	# of Days	Qualifier
2RE	12/18/09	01/18/10	31	J/R

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
02/05/10	4-Nitroaniline	25.8%	None	See HT

Surrogates - The samples exhibited acceptable surrogate %R values.

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
2	IS6-Perylene-d12	Severely Low	J/R - Associated Compounds

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01121809	None - ND	-	-	-	-
IR86-EB02121809	None - ND	-	-	-	-
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - EDS Sample ID #2 exhibited a severely low internal standard recovery and was reanalyzed. However, the reanalysis was severely outside of holding time. The original analysis results should be used for reporting.

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2212	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.36	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.6	U	5.6	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.16	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.10	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.067	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.6	U	5.6	0.24	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.6	U	5.6	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.26	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.19	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.6	U	5.6	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.6	U	5.6	0.64	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.23	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.16	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.6	U	5.6	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.43	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	0.20	J	5.6	0.067	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.64	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.6	U	5.6	0.48	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.28	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.42	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.099	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	0.33	J	5.6	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.19	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.26	ug/L	1
Hexachloroethane	67-72-1	8270D	5.6	U	5.6	0.24	ug/L	1
Isophorone	78-59-1	8270D	5.6	U	5.6	0.23	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.33	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.71	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.37	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.26	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.28	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.43	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.6	U	5.6	0.47	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.6	U	5.6	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2212	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.6	U	5.6	0.27	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.6	U	5.6	0.63	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.6	U	5.6	0.16	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		75	40-110
2-Fluorobiphenyl		77	50-110
Terphenyl-d14		71	50-135
2-Fluorophenol		62	20-110
Phenol-d5		63	10-115
2,4,6-Tribromophenol		83	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1530	GLR	12/22/2009 2155	24121
2	3520C	8270D	1	02/05/2010 1048	GLR	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.34	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.3	U	5.3	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.095	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.3	U	5.3	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.3	U	5.3	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.3	U	5.3	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.3	U	5.3	0.61	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.3	U	5.3	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.3	U	5.3	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.61	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.3	U	5.3	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	R U	1.1	0.094	ug/L	1 ISL
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.3	U	5.3	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.3	U	5.3	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.3	U	5.3	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.32	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.35	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.3	U	5.3	0.44	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1530	GLR	12/22/2009 2155	24121
2	3520C	8270D	1	02/05/2010 1048	GLR	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.3	U	5.3	0.21	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.3	U	5.3	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.3	U	5.3	0.60	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.3	U	5.3	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110	H	75	40-110
2-Fluorobiphenyl		106	50-110	H	75	50-110
Terphenyl-d14		69	50-135	H	79	50-135
2-Fluorophenol		59	20-110	H	72	20-110
Phenol-d5		47	10-115	H	70	10-115
2,4,6-Tribromophenol		73	40-125	H	79	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2 R

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1530	GLR	12/22/2009 2155	24121
2	3520C	8270D	1	02/05/2010 1048	GLR	01/18/2010 0024	25563

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10 R	UH	10	0.33	ug/L	2 HT
Atrazine	1912-24-9	8270D	10	UH	10	0.20	ug/L	2
Benzaldehyde	100-52-7	8270D	10	UH	10	1.0	ug/L	2
1,1'-Biphenyl	92-52-4	8270D	5.1	UH	5.1	0.20	ug/L	2
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	UH	1.0	0.14	ug/L	2
Butyl benzyl phthalate	85-68-7	8270D	2.0	UH	2.0	0.092	ug/L	2
Caprolactam	105-60-2	8270D	10	UH	10	1.2	ug/L	2
Carbazole	86-74-8	8270D	1.0	UH	1.0	0.061	ug/L	2
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	UH	1.0	0.19	ug/L	2
4-Chloroaniline	106-47-8	8270D	5.1	UH	5.1	0.22	ug/L	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	UH	5.1	0.18	ug/L	2
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	UH	1.0	0.23	ug/L	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	UH	1.0	0.19	ug/L	2
2-Chloronaphthalene	91-58-7	8270D	1.0	UH	1.0	0.17	ug/L	2
2-Chlorophenol	95-57-8	8270D	1.0	UH	1.0	0.20	ug/L	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	UH	5.1	0.20	ug/L	2
Dibenzofuran	132-64-9	8270D	1.0	UH	1.0	0.19	ug/L	2
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	UH	5.1	0.59	ug/L	2
2,4-Dichlorophenol	120-83-2	8270D	1.0	UH	1.0	0.21	ug/L	2
Diethylphthalate	84-66-2	8270D	1.0	UH	1.0	0.14	ug/L	2
Dimethyl phthalate	131-11-3	8270D	5.1	UH	5.1	0.11	ug/L	2
2,4-Dimethylphenol	105-67-9	8270D	1.0	UH	1.0	0.40	ug/L	2
Di-n-butyl phthalate	84-74-2	8270D	5.1	UH	5.1	0.061	ug/L	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	UH	10	0.59	ug/L	2
2,4-Dinitrophenol	51-28-5	8270D	5.1	UH	5.1	0.44	ug/L	2
2,4-Dinitrotoluene	121-14-2	8270D	2.0	UH	2.0	0.26	ug/L	2
2,6-Dinitrotoluene	606-20-2	8270D	10	UH	10	0.39	ug/L	2
Di-n-octylphthalate	117-84-0	8270D	1.0	UH	1.0	0.091	ug/L	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	UH	5.1	0.11	ug/L	2
Hexachlorobenzene	118-74-1	8270D	1.0	UH	1.0	0.17	ug/L	2
Hexachlorobutadiene	87-68-3	8270D	1.0	UH	1.0	0.12	ug/L	2
Hexachlorocyclopentadiene	77-47-4	8270D	10	UH	10	0.23	ug/L	2
Hexachloroethane	67-72-1	8270D	5.1	UH	5.1	0.22	ug/L	2
Isophorone	78-59-1	8270D	5.1	UH	5.1	0.21	ug/L	2
2-Methylnaphthalene	91-57-6	8270D	1.0	UH	1.0	0.18	ug/L	2
2-Methylphenol	95-48-7	8270D	1.0	UH	1.0	0.31	ug/L	2
3 & 4-Methylphenol	106-44-5	8270D	2.0	UH	2.0	0.65	ug/L	2
2-Nitroaniline	88-74-4	8270D	2.0	UH	2.0	0.34	ug/L	2
3-Nitroaniline	99-09-2	8270D	10	UH	10	0.23	ug/L	2
4-Nitroaniline	100-01-6	8270D	2.0	UH	2.0	0.19	ug/L	2
Nitrobenzene	98-95-3	8270D	1.0	UH	1.0	0.26	ug/L	2
2-Nitrophenol	88-75-5	8270D	10	UH	10	0.40	ug/L	2
4-Nitrophenol	100-02-7	8270D	5.1	UH	5.1	0.43	ug/L	2

exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw 3/16/10

Semivolatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2RE

Use original results

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/14/2010 1530	GLR	12/22/2009 2155	24121
2	3520C	8270D	1	02/05/2010 1048	GLR	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	~~UH~~ R	5.1	0.20	ug/L	2 HT
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	~~UH~~	5.1	0.24	ug/L	2
Pentachlorophenol	87-86-5	8270D	5.1	~~UH~~	5.1	0.58	ug/L	2
Phenol	108-95-2	8270D	1.0	~~UH~~	1.0	0.22	ug/L	2
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	~~UH~~	1.0	0.21	ug/L	2
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	~~UH~~	5.1	0.14	ug/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	40-110	H	75	40-110
2-Fluorobiphenyl		106	50-110	H	75	50-110
Terphenyl-d14		69	50-135	H	79	50-135
2-Fluorophenol		59	20-110	H	72	20-110
Phenol-d5		47	10-115	H	70	10-115
2,4,6-Tribromophenol		73	40-125	H	79	40-125

Exclude

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2252	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.36	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.6	U	5.6	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.16	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.10	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.4	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.067	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.6	U	5.6	0.25	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.6	U	5.6	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.26	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.19	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.6	U	5.6	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.6	U	5.6	0.65	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.24	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.16	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.6	U	5.6	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.44	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.6	U	5.6	0.067	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.65	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.6	U	5.6	0.48	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.28	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.43	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.10	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	0.32	J	5.6	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.19	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.26	ug/L	1
Hexachloroethane	67-72-1	8270D	5.6	U	5.6	0.25	ug/L	1
Isophorone	78-59-1	8270D	5.6	U	5.6	0.24	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.34	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.72	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.37	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.26	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.28	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.44	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.6	U	5.6	0.47	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.6	U	5.6	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

dw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2252	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.6	U	5.6	0.27	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.6	U	5.6	0.64	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.25	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.6	U	5.6	0.16	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		75	40-110
2-Fluorobiphenyl		79	50-110
Terphenyl-d14		70	50-135
2-Fluorophenol		70	20-110
Phenol-d5		68	10-115
2,4,6-Tribromophenol		77	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2312	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2312	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		80	40-110
2-Fluorobiphenyl		81	50-110
Terphenyl-d14		74	50-135
2-Fluorophenol		64	20-110
Phenol-d5		72	10-115
2,4,6-Tribromophenol		55	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2332	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lcw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	01/08/2010 2332	GLR	12/22/2009 2155	24121

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		73	40-110
2-Fluorobiphenyl		79	50-110
Terphenyl-d14		72	50-135
2-Fluorophenol		62	20-110
Phenol-d5		67	10-115
2,4,6-Tribromophenol		55	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: KL22010

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW61DW-09D	KL22010-001	Water
2	IR86-GW59DW-09D	KL22010-002	Water
2MS	IR86-GW59DW-09DMS	KL22010-002MS	Water
2MSD	IR86-GW59DW-09DMSD	KL22010-002MSD	Water
3	IR86-GW60-09D	KL22010-003	Water
4	IR86-GW31DW-09D	KL22010-004	Water
5	IR86-EB01121809	KL22010-005	Water
6	IR86-EB02121809	KL22010-006	Water
7	IR86-TB01121809	KL22010-007	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
12/30/09	2-Butanone	0.037 RRF	J/R	All Samples

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/31/09	2-Butanone	0.032 RRF	None	See ICAL

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01121809	None - ND	-	-	-	-
IR86-EB01121809	Methylene Chloride	0.33	3.3	None	All ND
IR86-EB02121809	Methylene Chloride	0.30	3.0	None	All ND
IR86-FB01121509	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - All criteria were met.

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1541	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	0.18	J	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	0.13	J	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW61DW-09D
Date Sampled: 12/18/2009 1225
Date Received: 12/22/2009

Laboratory ID: KL22010-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1541	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.29	J	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-120
Toluene-d8		101	85-120
Bromofluorobenzene		98	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NEJ
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1603	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	0.38	J	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW59DW-09D
Date Sampled: 12/18/2009 1345
Date Received: 12/22/2009

Laboratory ID: KL22010-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1603	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.28	J	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1624	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	2.2		1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	9.9		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	0.54	J	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	0.20	J	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW60-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1624	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	1.8		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW31DW-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1646	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ✓	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW31DW-09D
Date Sampled: 12/18/2009 1730
Date Received: 12/22/2009

Laboratory ID: KL22010-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1646	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		99	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1707	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JLL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.33	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

JLL
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01121809
Date Sampled: 12/18/2009 1800
Date Received: 12/22/2009

Laboratory ID: KL22010-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1707	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-120
Toluene-d8		105	85-120
Bromofluorobenzene		102	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

b

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1728	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~	10	2.0	ug/L	1 JL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.30	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

UW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB02121809
Date Sampled: 12/18/2009 1830
Date Received: 12/22/2009

Laboratory ID: KL22010-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1728	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		105	70-120
Toluene-d8		103	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-TB01121809
Date Sampled: 12/18/2009
Date Received: 12/22/2009

Laboratory ID: KL22010-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1750	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

pw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-TB01121809
Date Sampled: 12/18/2009
Date Received: 12/22/2009

Laboratory ID: KL22010-007
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/31/2009 1750	DLB		24587

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		102	85-120
Bromofluorobenzene		98	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

uw
3/16/10

ENVIRONMENTAL
Data Services, Inc.

METALS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LA15006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01011310	LA15006-001	Water
2	IR86-GW63-10A	LA15006-003	Water
3	IR86-GW58DW-10A	LA15006-008	Water
3MS	IR86-GW58DW-10AMS	LA15006-008MS	Water
3MSD	IR86-GW58DW-10AMSD	LA15006-008MSD	Water
4	IR86-GW56DW-10A	LA15006-012	Water
5	IR86-EB01011410	LA15006-014	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values.

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited the following contamination.

Compound	Conc. mg/kg	Action Level mg/kg	Qualifier	Affected Samples
Antimony	0.0087	0.0435	U	1
Arsenic	0.0043	0.0215	None	All ND
Copper	0.0020	0.010	U	2, 3, 4

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-EB01011310	None - ND	-	-	-	-
IR86-EB01011410	Iron	0.034	0.170	None	All ND

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values.

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/25/2010 1738	CDF	01/23/2010 1000	25996

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010 ~~0.0032~~	U ~~BJ~~	0.010	0.0030	mg/L	1 MBL
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.10	U	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/15/10

Mercury

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	01/18/2010 2353	BNW	01/18/2010 1700	25509

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

BW
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/25/2010 1742	CDF	01/23/2010 1000	25996

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.42		0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.039		0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	130		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050 ~~0.0027~~	U ~~BJ~~	0.0050	0.0016	mg/L	1 MBL
Iron	7439-89-6	6010C	1.0		0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	3.5	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.045		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	2.1	J	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0019	J	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	13		5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	01/19/2010 0009	BNW	01/18/2010 1700	25509

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/15/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/16/2010

Laboratory ID: LA15006-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/25/2010 1802	CDF	01/23/2010 1000	25996

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.42		0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.011	J	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	55		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0062		0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050 ~~0.0010~~	U ~~BJ~~	0.0050	0.0016	mg/L	1 MBL
Iron	7439-89-6	6010C	1.3		0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.1		5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.047		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	29		5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	99		5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.0092	J	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/16/2010

Laboratory ID: LA15006-008
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	01/19/2010 0011	BNW	01/18/2010 1700	25509

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/16/2010

Laboratory ID: LA15006-012
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/25/2010 1826	CDF	01/23/2010 1000	25996

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.52		0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.010	J	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	65		5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0052		0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050 ~~0.0025~~	W ~~BJ~~	0.0050	0.0016	mg/L	1 MBL
Iron	7439-89-6	6010C	2.6		0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	4.6	J	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.066		0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	9.2		5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	48		5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

AW 3/15/10

Mercury

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/16/2010

Laboratory ID: LA15006-012
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	01/19/2010 0014	BNW	01/18/2010 1700	25509

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
3/15/10

Client: CH2M HILL, Inc.
Description: IR86-EB01101410
Date Sampled: 01/14/2010 1400
Date Received: 01/16/2010

Laboratory ID: LA15006-014
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010C	1	01/25/2010 1834	CDF	01/23/2010 1000	25996

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aluminum	7429-90-5	6010C	0.20	U	0.20	0.060	mg/L	1
Antimony	7440-36-0	6010C	0.010	U	0.010	0.0030	mg/L	1
Arsenic	7440-38-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Barium	7440-39-3	6010C	0.020	U	0.020	0.0080	mg/L	1
Beryllium	7440-41-7	6010C	0.0040	U	0.0040	0.0013	mg/L	1
Cadmium	7440-43-9	6010C	0.0020	U	0.0020	0.00060	mg/L	1
Calcium	7440-70-2	6010C	5.0	U	5.0	1.6	mg/L	1
Chromium	7440-47-3	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Cobalt	7440-48-4	6010C	0.025	U	0.025	0.0080	mg/L	1
Copper	7440-50-8	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Iron	7439-89-6	6010C	0.034	J	0.10	0.030	mg/L	1
Lead	7439-92-1	6010C	0.010	U	0.010	0.0030	mg/L	1
Magnesium	7439-95-4	6010C	5.0	U	5.0	1.6	mg/L	1
Manganese	7439-96-5	6010C	0.015	U	0.015	0.0049	mg/L	1
Nickel	7440-02-0	6010C	0.040	U	0.040	0.013	mg/L	1
Potassium	7440-09-7	6010C	5.0	U	5.0	1.6	mg/L	1
Selenium	7782-49-2	6010C	0.010	U	0.010	0.0030	mg/L	1
Silver	7440-22-4	6010C	0.0050	U	0.0050	0.0016	mg/L	1
Sodium	7440-23-5	6010C	5.0	U	5.0	1.6	mg/L	1
Thallium	7440-28-0	6010C	0.050	U	0.050	0.016	mg/L	1
Vanadium	7440-62-2	6010C	0.050	U	0.050	0.016	mg/L	1
Zinc	7440-66-6	6010C	0.020	U	0.020	0.0060	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw 3/15/10

Mercury

Client: CH2M HILL, Inc.
Description: IR86-EB01101410
Date Sampled: 01/14/2010 1400
Date Received: 01/16/2010

Laboratory ID: LA15006-014
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	01/19/2010 0016	BNW	01/18/2010 1700	25509

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	0.00010	U	0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW
3/15/10

ENVIRONMENTAL
Data Services, Inc.

POLYNUCLEAR AROMATIC HYDROCARBONS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LA15006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01011310	LA15006-001	Water
2	IR86-FB01011310	LA15006-002	Water
3	IR86-GW63-10A	LA15006-003	Water
3MS	IR86-GW63-10AMS	LA15006-003MS	Water
3MSD	IR86-GW63-10AMSD	LA15006-003MSD	Water
4	IR86-GW58DW-10A	LA15006-004	Water
5	IR86-GW56DW-10A	LA15006-005	Water
6	IR86-EB01011410	LA15006-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
3	Benzo(a)pyrene	Ok/Ok/21	None For RPD Alone
	Benzo(b)fluoranthene	Ok/Ok/48	
	Benzo(g,h,i)perylene	Ok/Ok/31	
	Benzo(k)fluoranthene	Ok/Ok/42	
	Dibenzo(a,h)anthracene	Ok/Ok/39	
	Indeno(1,2,3-c,d)pyrene	Ok/Ok/38	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01011310	None - ND	-	-	-	-
IR86-EB01011410	None - ND	-	-	-	-
IR86-FB01011310	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package. .

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/20/2010 2019	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		59	20-150
Fluoranthene-d10		65	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/16/10

Semivolatile Organic Compounds by GC/MS (SIM)

Client: CH2M HILL, Inc.
Description: IR86-FB01011310
Date Sampled: 01/13/2010 1200
Date Received: 01/15/2010

Laboratory ID: LA15006-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	02/01/2010 1236	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		85	20-150
Fluoranthene-d10		83	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

KW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/20/2010 1340	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.062	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.050	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		53	20-150
Fluoranthene-d10		63	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/15/2010

Laboratory ID: LA15006-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/20/2010 1505	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.22	U	0.22	0.027	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.22	U	0.22	0.018	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.22	U	0.22	0.022	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.22	U	0.22	0.021	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.22	U	0.22	0.069	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.22	U	0.22	0.027	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.22	U	0.22	0.023	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.22	U	0.22	0.044	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.22	U	0.22	0.020	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.22	U	0.22	0.024	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.22	U	0.22	0.056	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.22	U	0.22	0.033	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.22	U	0.22	0.026	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.22	U	0.22	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		68	20-150
Fluoranthene-d10		71	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LWJ 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/15/2010

Laboratory ID: LA15006-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/20/2010 1534	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.20	U	0.20	0.016	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.20	U	0.20	0.020	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.20	U	0.20	0.019	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.20	U	0.20	0.063	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.20	U	0.20	0.024	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.20	U	0.20	0.021	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.20	U	0.20	0.040	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.20	U	0.20	0.018	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.20	U	0.20	0.022	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.20	U	0.20	0.051	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.20	U	0.20	0.030	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.20	U	0.20	0.023	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.20	U	0.20	0.017	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		69	20-150
Fluoranthene-d10		75	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011410
Date Sampled: 01/14/2010 1400
Date Received: 01/15/2010

Laboratory ID: LA15006-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D (SIM)	1	01/20/2010 1602	GLR	01/18/2010 0024	25564

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acenaphthene	83-32-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Acenaphthylene	208-96-8	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Anthracene	120-12-7	8270D (SIM)	0.21	U	0.21	0.017	ug/L	1
Benzo(a)anthracene	56-55-3	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(a)pyrene	50-32-8	8270D (SIM)	0.21	U	0.21	0.021	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D (SIM)	0.21	U	0.21	0.020	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D (SIM)	0.21	U	0.21	0.065	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D (SIM)	0.21	U	0.21	0.025	ug/L	1
Chrysene	218-01-9	8270D (SIM)	0.21	U	0.21	0.022	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D (SIM)	0.21	U	0.21	0.042	ug/L	1
Fluoranthene	206-44-0	8270D (SIM)	0.21	U	0.21	0.019	ug/L	1
Fluorene	86-73-7	8270D (SIM)	0.21	U	0.21	0.023	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D (SIM)	0.21	U	0.21	0.052	ug/L	1
Naphthalene	91-20-3	8270D (SIM)	0.21	U	0.21	0.031	ug/L	1
Phenanthrene	85-01-8	8270D (SIM)	0.21	U	0.21	0.024	ug/L	1
Pyrene	129-00-0	8270D (SIM)	0.21	U	0.21	0.018	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
2-Methylnaphthalene-d10		60	20-150
Fluoranthene-d10		66	20-150

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES/PCBs
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LA15006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01011310	LA15006-001	Water
1MS*	IR86-EB01011310MS	LA15006-001MS	Water
1MSD*	IR86-EB01011310MSD	LA15006-001MSD	Water
2	IR86-GW63-10A	LA15006-003	Water
3	IR86-GW58DW-10A	LA15006-004	Water
4	IR86-GW56DW-10A	LA15006-005	Water
4MS**	IR86-GW56DW-10AMS	LA15006-005MS	Water
4MSD**	IR86-GW56DW-10AMSD	LA15006-005MSD	Water
5	IR86-EB01011410	LA15006-006	Water

* - Pesticides ** - PCBs

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
5 (PCB)	Decachlorobiphenyl	35%	J/UJ

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01011310	None - ND	-	-	-	-
IR86-EB01011410	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	01/22/2010 0058	NCM	01/18/2010 2215	25551

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0083	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0063	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0042	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0063	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0042	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		40	30-135
Tetrachloro-m-xylene		86	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	01/22/2010 0145	NCM	01/18/2010 2215	25551

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0051	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0081	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0061	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0061	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0051	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		54	30-135
Tetrachloro-m-xylene		85	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/15/2010

Laboratory ID: LA15006-004
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	01/22/2010 0232	NCM	01/18/2010 2215	25551

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.027	U	0.027	0.0022	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.027	U	0.027	0.0055	ug/L	1
alpha-BHC	319-84-6	8081B	0.027	U	0.027	0.0033	ug/L	1
beta-BHC	319-85-7	8081B	0.027	U	0.027	0.021	ug/L	1
delta-BHC	319-86-8	8081B	0.027	U	0.027	0.0088	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.027	U	0.027	0.0033	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.027	U	0.027	0.0033	ug/L	1
4,4'-DDD	72-54-8	8081B	0.027	U	0.027	0.0066	ug/L	1
4,4'-DDE	72-55-9	8081B	0.027	U	0.027	0.0066	ug/L	1
4,4'-DDT	50-29-3	8081B	0.027	U	0.027	0.0033	ug/L	1
Dieldrin	60-57-1	8081B	0.027	U	0.027	0.0044	ug/L	1
Endosulfan I	959-98-8	8081B	0.027	U	0.027	0.0066	ug/L	1
Endosulfan II	33213-65-9	8081B	0.027	U	0.027	0.026	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.027	U	0.027	0.0033	ug/L	1
Endrin	72-20-8	8081B	0.027	U	0.027	0.0055	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.027	U	0.027	0.0033	ug/L	1
Endrin ketone	53494-70-5	8081B	0.027	U	0.027	0.0044	ug/L	1
Heptachlor	76-44-8	8081B	0.027	U	0.027	0.022	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.027	U	0.027	0.0033	ug/L	1
Methoxychlor	72-43-5	8081B	0.11	U	0.11	0.015	ug/L	1
Toxaphene	8001-35-2	8081B	0.27	U	0.27	0.033	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		39	30-135
Tetrachloro-m-xylene		87	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/15/2010

Laboratory ID: LA15006-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	01/22/2010 0248	NCM	01/18/2010 2215	25551

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.025	U	0.025	0.0020	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.025	U	0.025	0.0050	ug/L	1
alpha-BHC	319-84-6	8081B	0.025	U	0.025	0.0030	ug/L	1
beta-BHC	319-85-7	8081B	0.025	U	0.025	0.019	ug/L	1
delta-BHC	319-86-8	8081B	0.025	U	0.025	0.0080	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.025	U	0.025	0.0030	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.025	U	0.025	0.0030	ug/L	1
4,4'-DDD	72-54-8	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDE	72-55-9	8081B	0.025	U	0.025	0.0060	ug/L	1
4,4'-DDT	50-29-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Dieldrin	60-57-1	8081B	0.025	U	0.025	0.0040	ug/L	1
Endosulfan I	959-98-8	8081B	0.025	U	0.025	0.0060	ug/L	1
Endosulfan II	33213-65-9	8081B	0.025	U	0.025	0.024	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin	72-20-8	8081B	0.025	U	0.025	0.0050	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.025	U	0.025	0.0030	ug/L	1
Endrin ketone	53494-70-5	8081B	0.025	U	0.025	0.0040	ug/L	1
Heptachlor	76-44-8	8081B	0.025	U	0.025	0.020	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.025	U	0.025	0.0030	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.25	U	0.25	0.030	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		48	30-135
Tetrachloro-m-xylene		84	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011410
Date Sampled: 01/14/2010 1400
Date Received: 01/15/2010

Laboratory ID: LA15006-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8081B	1	01/22/2010 0303	NCM	01/18/2010 2215	25551

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	0.026	U	0.026	0.0021	ug/L	1
gamma-BHC (Lindane)	58-89-9	8081B	0.026	U	0.026	0.0052	ug/L	1
alpha-BHC	319-84-6	8081B	0.026	U	0.026	0.0031	ug/L	1
beta-BHC	319-85-7	8081B	0.026	U	0.026	0.020	ug/L	1
delta-BHC	319-86-8	8081B	0.026	U	0.026	0.0082	ug/L	1
alpha-Chlordane	5103-71-9	8081B	0.026	U	0.026	0.0031	ug/L	1
gamma-Chlordane	5103-74-2	8081B	0.026	U	0.026	0.0031	ug/L	1
4,4'-DDD	72-54-8	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDE	72-55-9	8081B	0.026	U	0.026	0.0062	ug/L	1
4,4'-DDT	50-29-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Dieldrin	60-57-1	8081B	0.026	U	0.026	0.0041	ug/L	1
Endosulfan I	959-98-8	8081B	0.026	U	0.026	0.0062	ug/L	1
Endosulfan II	33213-65-9	8081B	0.026	U	0.026	0.025	ug/L	1
Endosulfan sulfate	1031-07-8	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin	72-20-8	8081B	0.026	U	0.026	0.0052	ug/L	1
Endrin aldehyde	7421-93-4	8081B	0.026	U	0.026	0.0031	ug/L	1
Endrin ketone	53494-70-5	8081B	0.026	U	0.026	0.0041	ug/L	1
Heptachlor	76-44-8	8081B	0.026	U	0.026	0.021	ug/L	1
Heptachlor epoxide	1024-57-3	8081B	0.026	U	0.026	0.0031	ug/L	1
Methoxychlor	72-43-5	8081B	0.10	U	0.10	0.014	ug/L	1
Toxaphene	8001-35-2	8081B	0.26	U	0.26	0.031	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		34	30-135
Tetrachloro-m-xylene		91	25-140

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/20/2010 2038	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	U	0.26	0.052	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.63	U	0.63	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.063	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		41	40-135
Tetrachloro-m-xylene		96	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

aw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/20/2010 2050	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.051	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.61	U	0.61	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.51	U	0.51	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.51	U	0.51	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.51	U	0.51	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.061	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		55	40-135
Tetrachloro-m-xylene		94	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/15/2010

Laboratory ID: LA15006-004
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/20/2010 2103	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.27	U	0.27	0.055	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.55	U	0.55	0.15	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.66	U	0.66	0.22	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.55	U	0.55	0.15	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.55	U	0.55	0.16	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.55	U	0.55	0.12	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.27	U	0.27	0.066	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		40	40-135
Tetrachloro-m-xylene		96	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

WW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/15/2010

Laboratory ID: LA15006-005
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/20/2010 2141	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.25	U	0.25	0.050	ug/L	1
Aroclor 1221	11104-28-2	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.60	U	0.60	0.20	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.50	U	0.50	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.50	U	0.50	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.50	U	0.50	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.25	U	0.25	0.060	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		50	40-135
Tetrachloro-m-xylene		92	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011410
Date Sampled: 01/14/2010 1400
Date Received: 01/15/2010

Laboratory ID: LA15006-006
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8082A	1	01/20/2010 2154	NCM	01/18/2010 2215	25553

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aroclor 1016	12674-11-2	8082A	0.26	UJ U	0.26	0.052	ug/L	1 SSL
Aroclor 1221	11104-28-2	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1232	11141-16-5	8082A	0.62	U	0.62	0.21	ug/L	1
Aroclor 1242	53469-21-9	8082A	0.52	U	0.52	0.14	ug/L	1
Aroclor 1248	12672-29-6	8082A	0.52	U	0.52	0.15	ug/L	1
Aroclor 1254	11097-69-1	8082A	0.52	U	0.52	0.11	ug/L	1
Aroclor 1260	11096-82-5	8082A	0.26	U	0.26	0.062	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl	N	35	40-135
Tetrachloro-m-xylene		102	44-130

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW 3/16/10

ENVIRONMENTAL
Data Services, Inc.

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LA15006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 15, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-EB01011310	LA15006-001	Water
1MS	IR86-EB01011310MS	LA15006-001MS	Water
1MSD	IR86-EB01011310MSD	LA15006-001MSD	Water
2	IR86-FB01011310	LA15006-002	Water
3	IR86-GW63-10A	LA15006-003	Water
4	IR86-GW58DW-10A	LA15006-004	Water
5	IR86-GW56DW-10A	LA15006-005	Water
6	IR86-EB01011410	LA15006-006	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgment were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples except the following.

Sample	Date Sampled	Date Analyzed	# of Days	Qualifier
5	01/14/2010	02/04/2010	21	J/R

GC/MS Tuning - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
02/05/2010	4-Nitroaniline	25.78	J/UJ	2

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
02/08/2010	4-Nitroaniline	28.33	None	See HT

Surrogates - The samples exhibited acceptable surrogate %R values.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Atrazine	5.9%/Ok/170	J/R
	4-Chloroaniline	2.8%/9.9%/110	
	4-Nitroaniline	28%/Ok/84	J/UJ
	N-Nitrosodiphenylamine	19%/Ok/110	
	Benzaldehyde	Ok/Ok/31	None For RPD Alone
	Caprolactam	Ok/Ok/73	
	Carbazole	Ok/Ok/45	
	3-Nitroaniline	Ok/Ok/200	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
IR86-EB01011310	None - ND	-	-	-	-
IR86-EB01011410	None - ND	-	-	-	-
IR86-FB01011310	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not included in this data package.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 1916	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1	
Atrazine	1912-24-9	8270D	10	R ~~U~~	10	0.20	ug/L	1	MSL
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1	
1,1'-Biphenyl	92-52-4	8270D	5.1	U	5.1	0.20	ug/L	1	
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1	
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.091	ug/L	1	
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1	
Carbazole	86-74-8	8270D	1.0	U	1.0	0.061	ug/L	1	
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1	
4-Chloroaniline	106-47-8	8270D	5.1	R ~~U~~	5.1	0.22	ug/L	1	MSL
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.1	U	5.1	0.18	ug/L	1	
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1	
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1	
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1	
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1	
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.1	U	5.1	0.20	ug/L	1	
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1	
3,3'-Dichlorobenzidine	91-94-1	8270D	5.1	U	5.1	0.59	ug/L	1	
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1	
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1	
Dimethyl phthalate	131-11-3	8270D	5.1	U	5.1	0.11	ug/L	1	
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1	
Di-n-butyl phthalate	84-74-2	8270D	5.1	U	5.1	0.061	ug/L	1	
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.59	ug/L	1	
2,4-Dinitrophenol	51-28-5	8270D	5.1	U	5.1	0.43	ug/L	1	
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1	
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1	
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.090	ug/L	1	
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.1	U	5.1	0.11	ug/L	1	
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1	
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1	
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1	
Hexachloroethane	67-72-1	8270D	5.1	U	5.1	0.22	ug/L	1	
Isophorone	78-59-1	8270D	5.1	U	5.1	0.21	ug/L	1	
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1	
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1	
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.65	ug/L	1	
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1	
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1	
4-Nitroaniline	100-01-6	8270D	2.0	UJ ~~U~~	2.0	0.19	ug/L	1	MSL
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1	
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1	
4-Nitrophenol	100-02-7	8270D	5.1	U	5.1	0.42	ug/L	1	
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.1	U	5.1	0.20	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/15/2010

Laboratory ID: LA15006-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 1916	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.1	UJ ~~U~~	5.1	0.24	ug/L	1 MSL
Pentachlorophenol	87-86-5	8270D	5.1	U	5.1	0.58	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.1	U	5.1	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	40-110
2-Fluorobiphenyl		58	50-110
Terphenyl-d14		65	50-135
2-Fluorophenol		54	20-110
Phenol-d5		52	10-115
2,4,6-Tribromophenol		62	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-FB01011310
Date Sampled: 01/13/2010 1200
Date Received: 01/15/2010

Laboratory ID: LA15006-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/05/2010 1108	GLR	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	UJ ~~U~~	2.0	0.19	ug/L	1 CCH
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-FB01011310
Date Sampled: 01/13/2010 1200
Date Received: 01/15/2010

Laboratory ID: LA15006-002
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/05/2010 1108	GLR	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	40-110
2-Fluorobiphenyl		65	50-110
Terphenyl-d14		75	50-135
2-Fluorophenol		67	20-110
Phenol-d5		61	10-115
2,4,6-Tribromophenol		70	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2037	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.32	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.20	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.0	U	5.0	0.20	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.14	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.0	U	2.0	0.090	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.2	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.060	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.19	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.0	U	5.0	0.22	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	U	5.0	0.18	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.23	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.19	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.17	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	U	5.0	0.20	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.19	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	U	5.0	0.58	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.21	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.14	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.0	U	5.0	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.39	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.0	U	5.0	0.060	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.58	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.0	U	5.0	0.43	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.0	U	2.0	0.25	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.38	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.089	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	U	5.0	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.17	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.12	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.23	ug/L	1
Hexachloroethane	67-72-1	8270D	5.0	U	5.0	0.22	ug/L	1
Isophorone	78-59-1	8270D	5.0	U	5.0	0.21	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.18	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.30	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.0	U	2.0	0.64	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.0	U	2.0	0.33	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.23	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.0	U	2.0	0.19	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.25	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.39	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.0	U	5.0	0.42	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	U	5.0	0.20	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/15/2010

Laboratory ID: LA15006-003
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2037	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0	U	5.0	0.24	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.0	U	5.0	0.57	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.21	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	U	5.0	0.14	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		62	40-110
2-Fluorobiphenyl		65	50-110
Terphenyl-d14		67	50-135
2-Fluorophenol		63	20-110
Phenol-d5		61	10-115
2,4,6-Tribromophenol		71	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/15/2010

Laboratory ID: LA15006-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2057	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	11	U	11	0.36	ug/L	1
Atrazine	1912-24-9	8270D	11	U	11	0.22	ug/L	1
Benzaldehyde	100-52-7	8270D	11	U	11	1.1	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.6	U	5.6	0.22	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.1	U	1.1	0.16	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.2	U	2.2	0.10	ug/L	1
Caprolactam	105-60-2	8270D	11	U	11	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.1	U	1.1	0.067	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.1	U	1.1	0.21	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.6	U	5.6	0.24	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.6	U	5.6	0.20	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.1	U	1.1	0.26	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.1	U	1.1	0.21	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.1	U	1.1	0.19	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.1	U	1.1	0.22	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.6	U	5.6	0.22	ug/L	1
Dibenzofuran	132-64-9	8270D	1.1	U	1.1	0.21	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.6	U	5.6	0.64	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.1	U	1.1	0.23	ug/L	1
Diethylphthalate	84-66-2	8270D	1.1	U	1.1	0.16	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.6	U	5.6	0.12	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.1	U	1.1	0.43	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.6	U	5.6	0.067	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	11	U	11	0.64	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.6	U	5.6	0.48	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.2	U	2.2	0.28	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	11	U	11	0.42	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.1	U	1.1	0.099	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.6	U	5.6	0.12	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.1	U	1.1	0.19	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.1	U	1.1	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	11	U	11	0.26	ug/L	1
Hexachloroethane	67-72-1	8270D	5.6	U	5.6	0.24	ug/L	1
Isophorone	78-59-1	8270D	5.6	U	5.6	0.23	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.1	U	1.1	0.20	ug/L	1
2-Methylphenol	95-48-7	8270D	1.1	U	1.1	0.33	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.2	U	2.2	0.71	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.2	U	2.2	0.37	ug/L	1
3-Nitroaniline	99-09-2	8270D	11	U	11	0.26	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.2	U	2.2	0.21	ug/L	1
Nitrobenzene	98-95-3	8270D	1.1	U	1.1	0.28	ug/L	1
2-Nitrophenol	88-75-5	8270D	11	U	11	0.43	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.6	U	5.6	0.47	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.6	U	5.6	0.22	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

nw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/15/2010

Laboratory ID: LA15006-004
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2057	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.6	U	5.6	0.27	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.6	U	5.6	0.63	ug/L	1
Phenol	108-95-2	8270D	1.1	U	1.1	0.24	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.1	U	1.1	0.23	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.6	U	5.6	0.16	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		81	40-110
2-Fluorobiphenyl		81	50-110
Terphenyl-d14		74	50-135
2-Fluorophenol		78	20-110
Phenol-d5		84	10-115
2,4,6-Tribromophenol		92	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/15/2010

Laboratory ID: LA15006-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3520C	8270D	1	02/08/2010 1612	GLR	02/04/2010 2335	26955

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10 R	UH	10	0.32	ug/L	2 HT
Atrazine	1912-24-9	8270D	10	UH	10	0.20	ug/L	2
Benzaldehyde	100-52-7	8270D	10	UH	10	1.0	ug/L	2
1,1'-Biphenyl	92-52-4	8270D	5.0	UH	5.0	0.20	ug/L	2
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	UH	1.0	0.14	ug/L	2
Butyl benzyl phthalate	85-68-7	8270D	2.0	UH	2.0	0.090	ug/L	2
Caprolactam	105-60-2	8270D	10	UH	10	1.2	ug/L	2
Carbazole	86-74-8	8270D	1.0	UH	1.0	0.060	ug/L	2
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	UH	1.0	0.19	ug/L	2
4-Chloroaniline	106-47-8	8270D	5.0	UH	5.0	0.22	ug/L	2
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.0	UH	5.0	0.18	ug/L	2
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	UH	1.0	0.23	ug/L	2
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	UH	1.0	0.19	ug/L	2
2-Chloronaphthalene	91-58-7	8270D	1.0	UH	1.0	0.17	ug/L	2
2-Chlorophenol	95-57-8	8270D	1.0	UH	1.0	0.20	ug/L	2
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.0	UH	5.0	0.20	ug/L	2
Dibenzofuran	132-64-9	8270D	1.0	UH	1.0	0.19	ug/L	2
3,3'-Dichlorobenzidine	91-94-1	8270D	5.0	UH	5.0	0.58	ug/L	2
2,4-Dichlorophenol	120-83-2	8270D	1.0	UH	1.0	0.21	ug/L	2
Diethylphthalate	84-66-2	8270D	1.0	UH	1.0	0.14	ug/L	2
Dimethyl phthalate	131-11-3	8270D	5.0	UH	5.0	0.11	ug/L	2
2,4-Dimethylphenol	105-67-9	8270D	1.0	UH	1.0	0.39	ug/L	2
Di-n-butyl phthalate	84-74-2	8270D	5.0	UH	5.0	0.060	ug/L	2
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	UH	10	0.58	ug/L	2
2,4-Dinitrophenol	51-28-5	8270D	5.0	UH	5.0	0.43	ug/L	2
2,4-Dinitrotoluene	121-14-2	8270D	2.0	UH	2.0	0.25	ug/L	2
2,6-Dinitrotoluene	606-20-2	8270D	10	UH	10	0.38	ug/L	2
Di-n-octylphthalate	117-84-0	8270D	1.0	UH	1.0	0.089	ug/L	2
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.0	UH	5.0	0.11	ug/L	2
Hexachlorobenzene	118-74-1	8270D	1.0	UH	1.0	0.17	ug/L	2
Hexachlorobutadiene	87-68-3	8270D	1.0	UH	1.0	0.12	ug/L	2
Hexachlorocyclopentadiene	77-47-4	8270D	10	UH	10	0.23	ug/L	2
Hexachloroethane	67-72-1	8270D	5.0	UH	5.0	0.22	ug/L	2
Isophorone	78-59-1	8270D	5.0	UH	5.0	0.21	ug/L	2
2-Methylnaphthalene	91-57-6	8270D	1.0	UH	1.0	0.18	ug/L	2
2-Methylphenol	95-48-7	8270D	1.0	UH	1.0	0.30	ug/L	2
3 & 4-Methylphenol	106-44-5	8270D	2.0	UH	2.0	0.64	ug/L	2
2-Nitroaniline	88-74-4	8270D	2.0	UH	2.0	0.33	ug/L	2
3-Nitroaniline	99-09-2	8270D	10	UH	10	0.23	ug/L	2
4-Nitroaniline	100-01-6	8270D	2.0	UH	2.0	0.19	ug/L	2
Nitrobenzene	98-95-3	8270D	1.0	UH	1.0	0.25	ug/L	2
2-Nitrophenol	88-75-5	8270D	10	UH	10	0.39	ug/L	2
4-Nitrophenol	100-02-7	8270D	5.0	UH	5.0	0.42	ug/L	2
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.0	UH	5.0	0.20	ug/L	2

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/15/2010

Laboratory ID: LA15006-005
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3520C	8270D	1	02/08/2010 1612	GLR	02/04/2010 2335	26955

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.0 R	~~UH~~	5.0	0.24	ug/L	2 HT
Pentachlorophenol	87-86-5	8270D	5.0	~~UH~~	5.0	0.57	ug/L	2
Phenol	108-95-2	8270D	1.0	~~UH~~	1.0	0.22	ug/L	2
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	~~UH~~	1.0	0.21	ug/L	2
2,4,6-Trichlorophenol	88-06-2	8270D	5.0	~~UH~~	5.0	0.14	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5	H	87	40-110
2-Fluorobiphenyl	H	85	50-110
Terphenyl-d14	H	97	50-135
2-Fluorophenol	H	78	20-110
Phenol-d5	H	84	10-115
2,4,6-Tribromophenol	H	102	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011410
Date Sampled: 01/14/2010 1400
Date Received: 01/15/2010

Laboratory ID: LA15006-006
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2117	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetophenone	98-86-2	8270D	10	U	10	0.33	ug/L	1
Atrazine	1912-24-9	8270D	10	U	10	0.21	ug/L	1
Benzaldehyde	100-52-7	8270D	10	U	10	1.0	ug/L	1
1,1'-Biphenyl	92-52-4	8270D	5.2	U	5.2	0.21	ug/L	1
4-Bromophenyl phenyl ether	101-55-3	8270D	1.0	U	1.0	0.15	ug/L	1
Butyl benzyl phthalate	85-68-7	8270D	2.1	U	2.1	0.094	ug/L	1
Caprolactam	105-60-2	8270D	10	U	10	1.3	ug/L	1
Carbazole	86-74-8	8270D	1.0	U	1.0	0.063	ug/L	1
4-Chloro-3-methyl phenol	59-50-7	8270D	1.0	U	1.0	0.20	ug/L	1
4-Chloroaniline	106-47-8	8270D	5.2	U	5.2	0.23	ug/L	1
bis(2-Chloroethoxy)methane	111-91-1	8270D	5.2	U	5.2	0.19	ug/L	1
bis(2-Chloroethyl)ether	111-44-4	8270D	1.0	U	1.0	0.24	ug/L	1
bis(2-Chloroisopropyl)ether	108-60-1	8270D	1.0	U	1.0	0.20	ug/L	1
2-Chloronaphthalene	91-58-7	8270D	1.0	U	1.0	0.18	ug/L	1
2-Chlorophenol	95-57-8	8270D	1.0	U	1.0	0.21	ug/L	1
4-Chlorophenyl phenyl ether	7005-72-3	8270D	5.2	U	5.2	0.21	ug/L	1
Dibenzofuran	132-64-9	8270D	1.0	U	1.0	0.20	ug/L	1
3,3'-Dichlorobenzidine	91-94-1	8270D	5.2	U	5.2	0.60	ug/L	1
2,4-Dichlorophenol	120-83-2	8270D	1.0	U	1.0	0.22	ug/L	1
Diethylphthalate	84-66-2	8270D	1.0	U	1.0	0.15	ug/L	1
Dimethyl phthalate	131-11-3	8270D	5.2	U	5.2	0.11	ug/L	1
2,4-Dimethylphenol	105-67-9	8270D	1.0	U	1.0	0.41	ug/L	1
Di-n-butyl phthalate	84-74-2	8270D	5.2	U	5.2	0.063	ug/L	1
4,6-Dinitro-2-methylphenol	534-52-1	8270D	10	U	10	0.60	ug/L	1
2,4-Dinitrophenol	51-28-5	8270D	5.2	U	5.2	0.45	ug/L	1
2,4-Dinitrotoluene	121-14-2	8270D	2.1	U	2.1	0.26	ug/L	1
2,6-Dinitrotoluene	606-20-2	8270D	10	U	10	0.40	ug/L	1
Di-n-octylphthalate	117-84-0	8270D	1.0	U	1.0	0.093	ug/L	1
bis(2-Ethylhexyl)phthalate	117-81-7	8270D	5.2	U	5.2	0.11	ug/L	1
Hexachlorobenzene	118-74-1	8270D	1.0	U	1.0	0.18	ug/L	1
Hexachlorobutadiene	87-68-3	8270D	1.0	U	1.0	0.13	ug/L	1
Hexachlorocyclopentadiene	77-47-4	8270D	10	U	10	0.24	ug/L	1
Hexachloroethane	67-72-1	8270D	5.2	U	5.2	0.23	ug/L	1
Isophorone	78-59-1	8270D	5.2	U	5.2	0.22	ug/L	1
2-Methylnaphthalene	91-57-6	8270D	1.0	U	1.0	0.19	ug/L	1
2-Methylphenol	95-48-7	8270D	1.0	U	1.0	0.31	ug/L	1
3 & 4-Methylphenol	106-44-5	8270D	2.1	U	2.1	0.67	ug/L	1
2-Nitroaniline	88-74-4	8270D	2.1	U	2.1	0.34	ug/L	1
3-Nitroaniline	99-09-2	8270D	10	U	10	0.24	ug/L	1
4-Nitroaniline	100-01-6	8270D	2.1	U	2.1	0.20	ug/L	1
Nitrobenzene	98-95-3	8270D	1.0	U	1.0	0.26	ug/L	1
2-Nitrophenol	88-75-5	8270D	10	U	10	0.41	ug/L	1
4-Nitrophenol	100-02-7	8270D	5.2	U	5.2	0.44	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270D	5.2	U	5.2	0.21	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011410
Date Sampled: 01/14/2010 1400
Date Received: 01/15/2010

Laboratory ID: LA15006-006
Matrix: Aqueous

b

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	02/04/2010 2117	JGH	01/18/2010 0024	25563

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270D	5.2	U	5.2	0.25	ug/L	1
Pentachlorophenol	87-86-5	8270D	5.2	U	5.2	0.59	ug/L	1
Phenol	108-95-2	8270D	1.0	U	1.0	0.23	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270D	1.0	U	1.0	0.22	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270D	5.2	U	5.2	0.15	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		79	40-110
2-Fluorobiphenyl		76	50-110
Terphenyl-d14		72	50-135
2-Fluorophenol		80	20-110
Phenol-d5		76	10-115
2,4,6-Tribromophenol		79	40-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

NEW
3/16/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LA15006

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 16, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW39-10A	LA15006-007	Water
2	IR86-GW58DW-10A	LA15006-008	Water
3	IR86-GW15DW-10A	LA15006-009	Water
4	IR86-GW51DW-10A	LA15006-010	Water
5	IR86-GW51DWD-10A	LA15006-011	Water
6	IR86-GW56DW-10A	LA15006-012	Water
7	IR86-GW45DW-10A	LA15006-013	Water
8	IR86-EB01101410	LA15006-014	Water
9	IR86-TB01011510	LA15006-015	Water
10	IR86-EB01011310	LA15006-016	Water
11	IR86-EB01011510	LA15006-017	Water
12	IR86-FB01011310	LA15006-018	Water
13	IR86-GW63-10A	LA15006-019	Water
14	IR86-PTW1-10A	LA15006-020	Water
15	IR86-TB01-011310	LA15006-021	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values except the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
01/22/2010	2-Butanone	0.038 RRF	J/R	All Samples

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
01/23/2010	2-Butanone	0.044	None	See ICAL

Surrogates - All samples exhibited acceptable surrogate recovery values except the following.

Sample ID	Surrogate	%R	Qualifier
7	Toluene-d8	77%	J/UJ

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01011510	None - ND	-	-	-	-
IR86-EB01011310	Methylene chloride	0.28	2.8	U	
IR86-EB01101410	Methylene chloride	0.20	2.0	U	
IR86-EB01011510	Methylene chloride	0.26	2.6	U	
IR86-FB01011310	Methylene chloride	0.30	3.0	U	2

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW51DW-10A ug/L	IR86-GW51DWD-10A ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Client: CH2M HILL, Inc.
Description: IR86-GW39-10A
Date Sampled: 01/13/2010 1530
Date Received: 01/16/2010

Laboratory ID: LA15006-007
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1037	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	0.11	J	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	0.60	J	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	0.61	J	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	0.83	J	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	0.12	J	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	66		1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

NW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW39-10A
Date Sampled: 01/13/2010 1530
Date Received: 01/16/2010

Laboratory ID: LA15006-007
Matrix: Aqueous

1

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1037	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		96	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

RW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/16/2010

Laboratory ID: LA15006-008
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1058	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1	ICL
Carbon disulfide	75-15-0	8260B	3.4		1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	0.18	J	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0 ~~0.21~~	U ~~J~~	1.0	0.17	ug/L	1	FBL
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

MW 3/16/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW58DW-10A
Date Sampled: 01/13/2010 1431
Date Received: 01/16/2010

Laboratory ID: LA15006-008
Matrix: Aqueous

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1058	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-120
Toluene-d8		99	85-120
Bromofluorobenzene		96	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW15DW-10A
Date Sampled: 01/14/2010 1750
Date Received: 01/16/2010

Laboratory ID: LA15006-009
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1119	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	RQ	10	2.0	ug/L	1 JEC
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW15DW-10A
Date Sampled: 01/14/2010 1750
Date Received: 01/16/2010

Laboratory ID: LA15006-009
Matrix: Aqueous

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1119	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-120
Toluene-d8		97	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW51DW-10A
Date Sampled: 01/15/2010 1345
Date Received: 01/16/2010

Laboratory ID: LA15006-010
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1140	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	U	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW51DW-10A
Date Sampled: 01/15/2010 1345
Date Received: 01/16/2010

Laboratory ID: LA15006-010
Matrix: Aqueous

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1140	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-120
Toluene-d8		100	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW51DWD-10A
Date Sampled: 01/15/2010 1350
Date Received: 01/16/2010

Laboratory ID: LA15006-011
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1201	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW51DWD-10A
Date Sampled: 01/15/2010 1350
Date Received: 01/16/2010

Laboratory ID: LA15006-011
Matrix: Aqueous

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1201	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-120
Toluene-d8		99	85-120
Bromofluorobenzene		100	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/16/2010

Laboratory ID: LA15006-012
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1223	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1	
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1	
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1	
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1	
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1	
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1	ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1	
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1	
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Chloroform	67-66-3	8260B	0.19	J	1.0	0.17	ug/L	1	
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1	
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1	
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1	
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1	
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1	
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1	
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1	
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1	
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1	
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1	
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1	
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1	
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1	
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1	
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1	
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1	
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1	
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1	
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1	
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1	
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1	
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1	
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1	
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1	
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1	
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1	
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1	
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1	

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LeW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW56DW-10A
Date Sampled: 01/14/2010 1450
Date Received: 01/16/2010

Laboratory ID: LA15006-012
Matrix: Aqueous

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1223	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		90	70-120
Toluene-d8		117	85-120
Bromofluorobenzene		108	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

kw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW45DW-10A
Date Sampled: 01/15/2010 1038
Date Received: 01/16/2010

Laboratory ID: LA15006-013
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1244	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10 UJ	U	10	3.3	ug/L	1 SSL
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	U	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0 UJ	U	1.0	0.097	ug/L	1 SSL
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

LW 3/16/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-GW45DW-10A
Date Sampled: 01/15/2010 1038
Date Received: 01/16/2010

Laboratory ID: LA15006-013
Matrix: Aqueous

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1244	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50 UJ	U	0.50	0.024	ug/L	1 SSL
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		92	70-120
Toluene-d8	N	77	85-120
Bromofluorobenzene		97	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Client: CH2M HILL, Inc.
Description: IR86-EB01101410
Date Sampled: 01/14/2010 1400
Date Received: 01/16/2010

Laboratory ID: LA15006-014
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1306	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICC
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.20	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nd
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01101410
Date Sampled: 01/14/2010 1400
Date Received: 01/16/2010

Laboratory ID: LA15006-014
Matrix: Aqueous

8

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1306	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		91	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/16/10

Client: CH2M HILL, Inc.
Description: IR86-TB01011510
Date Sampled: 01/15/2010 1600
Date Received: 01/16/2010

Laboratory ID: LA15006-015
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1327	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10 R	~~U~~ N	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-TB01011510
Date Sampled: 01/15/2010 1600
Date Received: 01/16/2010

Laboratory ID: LA15006-015
Matrix: Aqueous

9

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1327	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		92	70-120
Toluene-d8		96	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/16/2010

Laboratory ID: LA15006-016
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1348	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R U	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.28	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011310
Date Sampled: 01/13/2010 1230
Date Received: 01/16/2010

Laboratory ID: LA15006-016
Matrix: Aqueous

10

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1348	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-120
Toluene-d8		99	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

QW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-EB01011510
Date Sampled: 01/15/2010 0900
Date Received: 01/16/2010

Laboratory ID: LA15006-017
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1409	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.26	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hw
3/16/10

Volatile Organic Compounds by GC/MS

Client: CH2M HILL, Inc.
Description: IR86-EB01011510
Date Sampled: 01/15/2010 0900
Date Received: 01/16/2010

Laboratory ID: LA15006-017
Matrix: Aqueous

11

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1409	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-120
Toluene-d8		97	85-120
Bromofluorobenzene		94	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

LW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-FB01011310
Date Sampled: 01/13/2010 1200
Date Received: 01/16/2010

Laboratory ID: LA15006-018
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1430	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R ~~U~~	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	0.30	J	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-FB01011310
Date Sampled: 01/13/2010 1200
Date Received: 01/16/2010

Laboratory ID: LA15006-018
Matrix: Aqueous

12

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1430	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-120
Toluene-d8		97	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

lew
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/16/2010

Laboratory ID: LA15006-019
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1451	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	0.27	J	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R U	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	0.45	J	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	0.42	J	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	12		1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	14		5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-GW63-10A
Date Sampled: 01/13/2010 1240
Date Received: 01/16/2010

Laboratory ID: LA15006-019
Matrix: Aqueous

13

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1451	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	17		0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		93	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-PTW1-10A
Date Sampled: 01/13/2010 1645
Date Received: 01/16/2010

Laboratory ID: LA15006-020
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1512	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R U	10	2.0	ug/L	1 JCL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

RW 3/16/10

Client: CH2M HILL, Inc.
Description: IR86-PTW1-10A
Date Sampled: 01/13/2010 1645
Date Received: 01/16/2010

Laboratory ID: LA15006-020
Matrix: Aqueous

14

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1512	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		92	70-120
Toluene-d8		95	85-120
Bromofluorobenzene		92	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

MW
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-TB01-011310
Date Sampled: 01/13/2010
Date Received: 01/16/2010

Laboratory ID: LA15006-021
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1533	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	10	U	10	3.3	ug/L	1
Benzene	71-43-2	8260B	1.0	U	1.0	0.027	ug/L	1
Bromodichloromethane	75-27-4	8260B	0.50	U	0.50	0.17	ug/L	1
Bromoform	75-25-2	8260B	1.0	U	1.0	0.010	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	1.0	U	1.0	0.20	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	10	R N	10	2.0	ug/L	1 ICL
Carbon disulfide	75-15-0	8260B	1.0	U	1.0	0.097	ug/L	1
Carbon tetrachloride	56-23-5	8260B	0.50	U	0.50	0.085	ug/L	1
Chlorobenzene	108-90-7	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroethane	75-00-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloroform	67-66-3	8260B	1.0	U	1.0	0.17	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	1.0	U	1.0	0.17	ug/L	1
Cyclohexane	110-82-7	8260B	1.0	U	1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	0.50	U	0.50	0.069	ug/L	1
Dibromochloromethane	124-48-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	0.50	U	0.50	0.061	ug/L	1
1,2-Dichlorobenzene	541-73-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,3-Dichlorobenzene	95-50-1	8260B	1.0	U	1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	1.0	U	1.0	0.17	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	1.0	U	1.0	0.071	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	1.0	U	1.0	0.054	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	0.50	U	0.50	0.023	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	1.0	U	1.0	0.094	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	1.0	U	1.0	0.087	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	1.0	U	1.0	0.079	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	0.50	U	0.50	0.081	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	0.50	U	0.50	0.090	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	0.50	U	0.50	0.18	ug/L	1
Ethylbenzene	100-41-4	8260B	1.0	U	1.0	0.17	ug/L	1
2-Hexanone	591-78-6	8260B	5.0	U	5.0	0.27	ug/L	1
Isopropylbenzene	98-82-8	8260B	1.0	U	1.0	0.029	ug/L	1
Methyl acetate	79-20-9	8260B	1.0	U	1.0	0.30	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.0	U	1.0	0.019	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	5.0	U	5.0	0.31	ug/L	1
Methylcyclohexane	108-87-2	8260B	5.0	U	5.0	0.95	ug/L	1
Methylene chloride	75-09-2	8260B	1.0	U	1.0	0.17	ug/L	1
Styrene	100-42-5	8260B	1.0	U	1.0	0.015	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.50	U	0.50	0.013	ug/L	1
Tetrachloroethene	127-18-4	8260B	1.0	U	1.0	0.014	ug/L	1
Toluene	108-88-3	8260B	1.0	U	1.0	0.17	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	1.0	U	1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	0.50	U	0.50	0.17	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	1.0	U	1.0	0.029	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	1.0	U	1.0	0.031	ug/L	1

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

hew
3/16/10

Client: CH2M HILL, Inc.
Description: IR86-TB01-011310
Date Sampled: 01/13/2010
Date Received: 01/16/2010

Laboratory ID: LA15006-021
Matrix: Aqueous

15

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	01/23/2010 1533	DLB		26051

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.50	U	0.50	0.024	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	0.50	U	0.50	0.051	ug/L	1
Vinyl chloride	75-01-4	8260B	0.50	U	0.50	0.065	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.50	U	0.50	0.17	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		92	70-120
Toluene-d8		98	85-120
Bromofluorobenzene		91	75-120

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

CW 3/16/10

ENVIRONMENTAL
Data Services, Inc.

MERCURY

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LC17029

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 25, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW58IW-10A	LC17029-009	Water
2	IR86-GW58-10A	LC17029-010	Water
3	IR86-GW58D-10A	LC17029-011	Water
4	IR86-FB01031610	LC17029-012	Water
5	IR86-EB01031610	LC17029-013	Water
6	IR86-GW56-10A	LC17029-014	Water
6MS	IR86-GW56-10AMS	LC17029-014MS	Water
6MSD	IR86-GW56-10AMSD	LC17029-014MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," October 2004, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were prepared and analyzed within 28 days for mercury.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - CRDL standards were not reported.

Method and Calibration Blanks - The method blanks and continuing calibration blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
IR86-EB01031610	None - ND	-	-	-	-
IR86-FB01031610	None - ND	-	-	-	-

ICP Interference Check Sample - All %R values were acceptable.

Matrix Spike/Duplicate - The matrix spike/duplicate samples exhibited acceptable %R and RPD values.

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - An ICP serial dilution sample was not analyzed.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW58-10A mg/L	IR86-GW58D-10A mg/L	RPD	Qualifier
None	ND	ND	-	-

Compound Quantitation - No discrepancies were identified.

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-GW58IW-10A**
Date Sampled: **03/16/2010 1305**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-009**
Matrix: **Aqueous**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0044	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/25/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-GW58-10A**
Date Sampled: **03/16/2010 1530**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-010**
Matrix: **Aqueous**

2

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0046	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

lcw 3/25/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-GW58D-10A**
Date Sampled: **03/16/2010 1535**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-011**
Matrix: **Aqueous**

3

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0049	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nev
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-FB01031610**
Date Sampled: **03/16/2010 1450**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-012**
Matrix: **Aqueous**

4

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0051	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-EB01031610**
Date Sampled: **03/16/2010 1500**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-013**
Matrix: **Aqueous**

5

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0054	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/25/10

Mercury

Client: **CH2M HILL, Inc.**
Description: **IR86-GW56-10A**
Date Sampled: **03/16/2010 1600**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-014**
Matrix: **Aqueous**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		7470A	1	03/19/2010 0057	KJC	03/18/2010 1714	29676

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Mercury	7439-97-6	7470A	ND		0.00010	0.000053	mg/L	1

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/25/10

ENVIRONMENTAL
Data Services, Inc.

PESTICIDES

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: LC17029

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: March 25, 2010

Laboratory: Shealy Environmental Svcs., West Columbia, SC Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-SD105-10A	LC17029-001	Soil
1DL	IR86-SD105-10ADL	LC17029-001DL	Soil
2	IR86-SD106-10A	LC17029-002	Soil
2DL	IR86-SD106-10ADL	LC17029-002DL	Soil
3DL	IR86-SD108-10A	LC17029-003	Soil
4DL	IR86-SD109-10A	LC17029-004	Soil
5DL	IR86-SD110-10A	LC17029-005	Soil
6	IR86-SD112-10A	LC17029-006	Soil
6DL	IR86-SD112-10ADL	LC17029-006DL	Soil
7	IR86-SD113-10A	LC17029-007	Soil
7MS	IR86-SD113-10AMS	LC17029-007MS	Soil
7MSD	IR86-SD113-10AMSD	LC17029-007MSD	Soil
7DL	IR86-SD113-10ADL	LC17029-007DL	Soil
8DL	IR86-SD112D-10A	LC17029-008	Soil

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

Instrument performance - All 4,4'-DDT/endrin % breakdown, resolution check mixture and PEMs were within criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Calibration Verification - The continuing calibrations exhibited acceptable %D values except the following.

CCAL Date	Compound	%D	Qualifier	Affected Samples
03/20/10 (0600)	4,4'-DDT	83.2%/60.4%	J/UJ	1, 2, 6, 7
	Methoxychlor	80.9%/55.0%		
	Endrin Ketone	28.8%/34.4%		
	Toxaphene	59.5%/81.6%	None	See LCS
03/21/10	4,4'-DDT	48.7%/37.0%	J/UJ	1DL, 2DL, 4DL, 5DL, 6DL, 7DL, 8DL
	Methoxychlor	42.8%/40.4%		
	Toxaphene	39.0%/45.0%	None	See LCS

.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following.

Sample ID	Surrogate	%R	Qualifier
3DL	TCX	63%	J/UJ unless R

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
7	Toxaphene	0%/0%/0	None - See LCS
	All other Compounds	High RPD	None for RPD Alone

.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 29652	Toxaphene	0%	J/R	All Samples

.

Method Blank - The method blanks were free of contamination.

Field and Equipment Blank - Field QC samples were not analyzed.

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-SD112-10A ug/kg	IR86-SD112D-10A ug/kg	RPD	Qualifier
Endrin Aldehyde	1.2	ND	NC	None

Compound Identification - Retention times were acceptable and no further action was taken.

Compound Quantitation - EDS Sample ID 1, 2, 6 and 7 were reanalyzed at a 10X dilution due to matrix interference and both analysis runs were reported. EDS Sample IDs 3, 4, 5 and 8 were analyzed at a 10X during the initial analysis. All original analysis results should be used for reporting.

Several samples exhibited compounds with a high %D value between columns and were flagged (P) by the laboratory and further qualified (J) by the reviewer.

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-10A**
Date Sampled: **03/16/2010 0900**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-001**
Matrix: **Solid**
% Solids: **35.6** **03/17/2010 2329**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0319	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 1933	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	4.7	U	4.7	0.93	ug/kg	1	
gamma-BHC (Lindane)	58-89-9	8081B	4.7	U	4.7	0.99	ug/kg	1	
alpha-BHC	319-84-6	8081B	4.7	U	4.7	1.1	ug/kg	1	
beta-BHC	319-85-7	8081B	4.7	U	4.7	0.82	ug/kg	1	
delta-BHC	319-86-8	8081B	4.7	U	4.7	0.88	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	4.7	U	4.7	0.80	ug/kg	1	
gamma-Chlordane	5103-74-2	8081B	4.7	U	4.7	0.66	ug/kg	1	
4,4'-DDD	72-54-8	8081B	9.1	U	9.1	0.69	ug/kg	1	
4,4'-DDE	72-55-9	8081B	9.1	U	9.1	0.88	ug/kg	1	
4,4'-DDT	**50-29-3**	**8081B**	**7.8**	J ~~JP~~	**9.1**	**0.77**	**ug/kg**	1	CCH
Dieldrin	60-57-1	8081B	9.1	U	9.1	0.91	ug/kg	1	
Endosulfan I	**959-98-8**	**8081B**	**4.6**	J ~~JP~~	**4.7**	**0.93**	**ug/kg**	1	2C
Endosulfan II	33213-65-9	8081B	9.1	U	9.1	0.69	ug/kg	1	
Endosulfan sulfate	1031-07-8	8081B	9.1	U	9.1	0.63	ug/kg	1	
Endrin	72-20-8	8081B	9.1	U	9.1	0.91	ug/kg	1	
Endrin aldehyde	7421-93-4	8081B	9.1	U	9.1	0.82	ug/kg	1	
Endrin ketone	**53494-70-5**	**8081B**	**4.6**	J ~~JP~~	**9.1**	**0.60**	**ug/kg**	1	CCH
Heptachlor	76-44-8	8081B	4.7	U	4.7	1.1	ug/kg	1	
Heptachlor epoxide	1024-57-3	8081B	4.7	U	4.7	0.85	ug/kg	1	
Methoxychlor	72-43-5	8081B	47	UJ ~~U~~	47	3.7	ug/kg	1	CCH
Toxaphene	8001-35-2	8081B	82	~~U~~ R	82	25	ug/kg	1	BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		88	55-130		98	55-130
Tetrachloro-m-xylene		87	70-125		76	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/25/10

Organochlorine Pesticides by GC

IDL

Client: **CH2M HILL, Inc.**
Description: **IR86-SD105-10A**
Date Sampled: **03/16/2010 0900**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-001**
Matrix: **Solid**
% Solids: **35.6** **03/17/2010 2329**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0319	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 1933	NCM	03/18/2010 1048	29652

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	47	U	47	9.3	ug/kg	2	
gamma-BHC (Lindane)	58-89-9	8081B	47	U	47	9.9	ug/kg	2	
alpha-BHC	319-84-6	8081B	47	U	47	11	ug/kg	2	
beta-BHC	319-85-7	8081B	47	U	47	8.2	ug/kg	2	
delta-BHC	319-86-8	8081B	47	U	47	8.8	ug/kg	2	
alpha-Chlordane	5103-71-9	8081B	47	U	47	8.0	ug/kg	2	
gamma-Chlordane	5103-74-2	8081B	47	U	47	6.6	ug/kg	2	
4,4'-DDD	72-54-8	8081B	91	U	91	6.9	ug/kg	2	
4,4'-DDE	72-55-9	8081B	91	U	91	8.8	ug/kg	2	
4,4'-DDT	50-29-3	8081B	91	~~U~~ UJ	91	7.7	ug/kg	2	CCH
Dieldrin	60-57-1	8081B	91	U	91	9.1	ug/kg	2	
Endosulfan I	959-98-8	8081B	47	U	47	9.3	ug/kg	2	
Endosulfan II	33213-65-9	8081B	91	U	91	6.9	ug/kg	2	
Endosulfan sulfate	1031-07-8	8081B	91	U	91	6.3	ug/kg	2	
Endrin	72-20-8	8081B	91	U	91	9.1	ug/kg	2	
Endrin aldehyde	7421-93-4	8081B	91	U	91	8.2	ug/kg	2	
Endrin ketone	53494-70-5	8081B	91	U	91	6.0	ug/kg	2	
Heptachlor	76-44-8	8081B	47	U	47	11	ug/kg	2	
Heptachlor epoxide	1024-57-3	8081B	47	U	47	8.5	ug/kg	2	
Methoxychlor	72-43-5	8081B	470	~~U~~ UJ	470	37	ug/kg	2	CCH
Toxaphene	8001-35-2	8081B	820	~~U~~ R	820	250	ug/kg	2	BSL

exclude

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		88	55-130		98	55-130
Tetrachloro-m-xylene		87	70-125		76	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/25/10

Organochlorine Pesticides by GC

2

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-10A**
Date Sampled: **03/16/2010 0905**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-002**
Matrix: **Solid**
% Solids: **28.1** **03/17/2010 2329**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0339	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 1955	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	6.0	U	6.0	1.2	ug/kg	1	
gamma-BHC (Lindane)	58-89-9	8081B	6.0	U	6.0	1.3	ug/kg	1	
alpha-BHC	319-84-6	8081B	6.0	U	6.0	1.4	ug/kg	1	
beta-BHC	319-85-7	8081B	6.0	U	6.0	1.1	ug/kg	1	
delta-BHC	319-86-8	8081B	6.0	U	6.0	1.1	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	6.0	U	6.0	1.0	ug/kg	1	
gamma-Chlordane	5103-74-2	8081B	6.0	U	6.0	0.85	ug/kg	1	
4,4'-DDD	72-54-8	8081B	12	U	12	0.88	ug/kg	1	
4,4'-DDE	72-55-9	8081B	12	U	12	1.1	ug/kg	1	
4,4'-DDT	**50-29-3**	**8081B**	**9.8**	J ~~JP~~	**12**	**0.99**	**ug/kg**	**1**	CCH
Dieldrin	60-57-1	8081B	12	U	12	1.2	ug/kg	1	
Endosulfan I	959-98-8	8081B	6.0	U	6.0	1.2	ug/kg	1	
Endosulfan II	33213-65-9	8081B	12	U	12	0.88	ug/kg	1	
Endosulfan sulfate	1031-07-8	8081B	12	U	12	0.81	ug/kg	1	
Endrin	72-20-8	8081B	12	U	12	1.2	ug/kg	1	
Endrin aldehyde	**7421-93-4**	**8081B**	**2.4**	J	**12**	**1.1**	**ug/kg**	**1**	
Endrin ketone	**53494-70-5**	**8081B**	**6.4**	J ~~J~~	**12**	**0.78**	**ug/kg**	**1**	CCH
Heptachlor	76-44-8	8081B	6.0	U	6.0	1.4	ug/kg	1	
Heptachlor epoxide	1024-57-3	8081B	6.0	U	6.0	1.1	ug/kg	1	
Methoxychlor	72-43-5	8081B	60	~~U~~ UJ	60	4.7	ug/kg	1	CCH
Toxaphene	8001-35-2	8081B	110	~~U~~ R	110	32	ug/kg	1	BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		83	55-130		102	55-130
Tetrachloro-m-xylene		87	70-125		89	70-125

PQL = Practical quantitation limit
U = Not detected at or above the detection limit
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD106-10A**
Date Sampled: **03/16/2010 0905**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-002** 2DL
Matrix: **Solid**
% Solids: **28.1** **03/17/2010 2329**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0339	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 1955	NCM	03/18/2010 1048	29652

use original

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	ND		60	12	ug/kg	2	
gamma-BHC (Lindane)	58-89-9	8081B	ND		60	13	ug/kg	2	
alpha-BHC	319-84-6	8081B	ND		60	14	ug/kg	2	
beta-BHC	319-85-7	8081B	ND		60	11	ug/kg	2	
delta-BHC	319-86-8	8081B	ND		60	11	ug/kg	2	
alpha-Chlordane	5103-71-9	8081B	ND		60	10	ug/kg	2	
gamma-Chlordane	5103-74-2	8081B	ND		60	8.5	ug/kg	2	
4,4'-DDD	72-54-8	8081B	ND		120	8.8	ug/kg	2	
4,4'-DDE	72-55-9	8081B	ND		120	11	ug/kg	2	
4,4'-DDT	50-29-3	8081B	~~ND~~	UJ	120	9.9	ug/kg	2	CCH
Dieldrin	60-57-1	8081B	ND		120	12	ug/kg	2	
Endosulfan I	959-98-8	8081B	ND		60	12	ug/kg	2	
Endosulfan II	33213-65-9	8081B	ND		120	8.8	ug/kg	2	
Endosulfan sulfate	1031-07-8	8081B	ND		120	8.1	ug/kg	2	
Endrin	72-20-8	8081B	ND		120	12	ug/kg	2	
Endrin aldehyde	7421-93-4	8081B	ND		120	11	ug/kg	2	
Endrin ketone	53494-70-5	8081B	ND		120	7.8	ug/kg	2	
Heptachlor	76-44-8	8081B	ND		60	14	ug/kg	2	
Heptachlor epoxide	1024-57-3	8081B	ND		60	11	ug/kg	2	
Methoxychlor	72-43-5	8081B	~~ND~~	UJ	600	47	ug/kg	2	CCH
Toxaphene	8001-35-2	8081B	~~ND~~	R	1100	320	ug/kg	2	BSL

exclude

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		83	55-130		102	55-130
Tetrachloro-m-xylene		87	70-125		89	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD108-10A**
Date Sampled: **03/16/2010 0910**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-003**
Matrix: **Solid**
% Solids: **34.6** **03/17/2010 2329**

30L

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	10	03/20/2010 2017	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND	UJ	48	9.7	ug/kg	1 SSL
gamma-BHC (Lindane)	58-89-9	8081B	ND		48	10	ug/kg	1
alpha-BHC	319-84-6	8081B	ND		48	11	ug/kg	1
beta-BHC	319-85-7	8081B	ND		48	8.5	ug/kg	1
delta-BHC	319-86-8	8081B	ND		48	9.1	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	ND		48	8.3	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	ND		48	6.8	ug/kg	1
4,4'-DDD	72-54-8	8081B	ND		94	7.1	ug/kg	1
4,4'-DDE	72-55-9	8081B	ND		94	9.1	ug/kg	1
4,4'-DDT	50-29-3	8081B	ND	UJ	94	8.0	ug/kg	1
Dieldrin	60-57-1	8081B	ND		94	9.4	ug/kg	1
Endosulfan I	959-98-8	8081B	ND		48	9.7	ug/kg	1
Endosulfan II	33213-65-9	8081B	ND		94	7.1	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	ND		94	6.6	ug/kg	1
Endrin	72-20-8	8081B	ND		94	9.4	ug/kg	1
Endrin aldehyde	**7421-93-4**	**8081B**	**22**	**J JP**	**94**	**8.5**	**ug/kg**	**1**
Endrin ketone	**53494-70-5**	**8081B**	**67**	**J JP**	**94**	**6.3**	**ug/kg**	**1**
Heptachlor	76-44-8	8081B	ND	UJ	48	11	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	ND	UJ	48	8.8	ug/kg	1
Methoxychlor	72-43-5	8081B	ND	UJ	480	38	ug/kg	1
Toxaphene	8001-35-2	8081B	ND	R	850	260	ug/kg	1 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		118	55-130
Tetrachloro-m-xylene	N	63	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

nw
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD109-10A**
Date Sampled: **03/16/2010 0915**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-004**
Matrix: **Solid**
% Solids: **50.0** **03/17/2010 2329**

40L

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	10	03/20/2010 2038	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	ND		34	6.8	ug/kg	1	
gamma-BHC (Lindane)	58-89-9	8081B	ND		34	7.2	ug/kg	1	
alpha-BHC	319-84-6	8081B	ND		34	7.8	ug/kg	1	
beta-BHC	319-85-7	8081B	ND		34	6.0	ug/kg	1	
delta-BHC	319-86-8	8081B	ND		34	6.4	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	ND		34	5.8	ug/kg	1	
gamma-Chlordane	5103-74-2	8081B	ND		34	4.8	ug/kg	1	
4,4'-DDD	72-54-8	8081B	ND		66	5.0	ug/kg	1	
4,4'-DDE	72-55-9	8081B	ND		66	6.4	ug/kg	1	
4,4'-DDT	50-29-3	8081B	~~ND~~ UJ		66	5.6	ug/kg	1	CCH
Dieldrin	60-57-1	8081B	ND		66	6.6	ug/kg	1	
Endosulfan I	959-98-8	8081B	ND		34	6.8	ug/kg	1	
Endosulfan II	33213-65-9	8081B	ND		66	5.0	ug/kg	1	
Endosulfan sulfate	1031-07-8	8081B	ND		66	4.6	ug/kg	1	
Endrin	72-20-8	8081B	ND		66	6.6	ug/kg	1	
Endrin aldehyde	7421-93-4	8081B	ND		66	6.0	ug/kg	1	
Endrin ketone	**53494-70-5**	**8081B**	**16**	**J**	**66**	**4.4**	**ug/kg**	**1**	
Heptachlor	76-44-8	8081B	ND		34	7.8	ug/kg	1	
Heptachlor epoxide	1024-57-3	8081B	ND		34	6.2	ug/kg	1	
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		340	27	ug/kg	1	CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		600	180	ug/kg	1	BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		103	55-130
Tetrachloro-m-xylene		91	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/25/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SD110-10A**
Date Sampled: **03/16/2010 0920**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-005**
Matrix: **Solid**
% Solids: **53.3** **03/17/2010 2329**

5DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	10	03/20/2010 2100	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND		31	6.3	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	ND		31	6.6	ug/kg	1
alpha-BHC	319-84-6	8081B	ND		31	7.2	ug/kg	1
beta-BHC	319-85-7	8081B	ND		31	5.5	ug/kg	1
delta-BHC	319-86-8	8081B	ND		31	5.9	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	ND		31	5.3	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	ND		31	4.4	ug/kg	1
4,4'-DDD	72-54-8	8081B	ND		61	4.6	ug/kg	1
4,4'-DDE	**72-55-9**	**8081B**	**6.8**	**J**	**61**	**5.9**	**ug/kg**	**1**
4,4'-DDT	**50-29-3**	**8081B**	**17**	J JP	**61**	**5.2**	**ug/kg**	**1** CCH
Dieldrin	60-57-1	8081B	ND		61	6.1	ug/kg	1
Endosulfan I	959-98-8	8081B	ND		31	6.3	ug/kg	1
Endosulfan II	33213-65-9	8081B	ND		61	4.6	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	ND		61	4.2	ug/kg	1
Endrin	72-20-8	8081B	ND		61	6.1	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	ND		61	5.5	ug/kg	1
Endrin ketone	53494-70-5	8081B	ND		61	4.1	ug/kg	1
Heptachlor	76-44-8	8081B	ND		31	7.2	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	ND		31	5.7	ug/kg	1
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		310	25	ug/kg	1 CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		550	170	ug/kg	1 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		106	55-130
Tetrachloro-m-xylene		86	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

MW 3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-10A**
Date Sampled: **03/16/2010 0925**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-006**
Matrix: **Solid**
% Solids: **31.1** **03/17/2010 2329**

6

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0359	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 2122	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND		5.5	1.1	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	ND		5.5	1.2	ug/kg	1
alpha-BHC	319-84-6	8081B	ND		5.5	1.3	ug/kg	1
beta-BHC	319-85-7	8081B	ND		5.5	0.96	ug/kg	1
delta-BHC	319-86-8	8081B	ND		5.5	1.0	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	ND		5.5	0.93	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	ND		5.5	0.77	ug/kg	1
4,4'-DDD	72-54-8	8081B	ND		11	0.80	ug/kg	1
4,4'-DDE	72-55-9	8081B	ND		11	1.0	ug/kg	1
4,4'-DDT	50-29-3	8081B	~~ND~~ UJ		11	0.90	ug/kg	1 CCH
Dieldrin	60-57-1	8081B	ND		11	1.1	ug/kg	1
Endosulfan I	959-98-8	8081B	ND		5.5	1.1	ug/kg	1
Endosulfan II	33213-65-9	8081B	ND		11	0.80	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	ND		11	0.74	ug/kg	1
Endrin	72-20-8	8081B	ND		11	1.1	ug/kg	1
Endrin aldehyde	**7421-93-4**	**8081B**	**1.2**	**J**	**11**	**0.96**	**ug/kg**	**1**
Endrin ketone	53494-70-5	8081B	~~ND~~ UJ		11	0.71	ug/kg	1 CCH
Heptachlor	76-44-8	8081B	ND		5.5	1.3	ug/kg	1
Heptachlor epoxide	1024-57-3	8081B	ND		5.5	1.0	ug/kg	1
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		55	4.3	ug/kg	1 CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		96	29	ug/kg	1 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		77	55-130		103	55-130
Tetrachloro-m-xylene		84	70-125		81	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

hw
3/25/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112-10A**
Date Sampled: **03/16/2010 0925**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-006**
Matrix: **Solid**
% Solids: **31.1** **03/17/2010 2329**

GDL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0359	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 2122	NCM	03/18/2010 1048	29652

use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND		55	11	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	ND		55	12	ug/kg	2
alpha-BHC	319-84-6	8081B	ND		55	13	ug/kg	2
beta-BHC	319-85-7	8081B	ND		55	9.6	ug/kg	2
delta-BHC	319-86-8	8081B	ND		55	10	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	ND		55	9.3	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	ND		55	7.7	ug/kg	2
4,4'-DDD	72-54-8	8081B	ND		110	8.0	ug/kg	2
4,4'-DDE	72-55-9	8081B	ND		110	10	ug/kg	2
4,4'-DDT	50-29-3	8081B	~~ND~~ UJ		110	9.0	ug/kg	2 CCH
Dieldrin	60-57-1	8081B	ND		110	11	ug/kg	2
Endosulfan I	959-98-8	8081B	ND		55	11	ug/kg	2
Endosulfan II	33213-65-9	8081B	ND		110	8.0	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	ND		110	7.4	ug/kg	2
Endrin	72-20-8	8081B	ND		110	11	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	ND		110	9.6	ug/kg	2
Endrin ketone	53494-70-5	8081B	ND		110	7.1	ug/kg	2
Heptachlor	76-44-8	8081B	ND		55	13	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	ND		55	10	ug/kg	2
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		550	43	ug/kg	2 CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		960	290	ug/kg	2 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		77	55-130		103	55-130
Tetrachloro-m-xylene		84	70-125		81	70-125

exclude Q

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-10A**
Date Sampled: **03/16/2010 0930**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-007**
Matrix: **Solid**
% Solids: **47.1** **03/17/2010 2329**

7

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0420	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 2144	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND		3.6	0.72	ug/kg	1
gamma-BHC (Lindane)	58-89-9	8081B	ND		3.6	0.76	ug/kg	1
alpha-BHC	319-84-6	8081B	ND		3.6	0.83	ug/kg	1
beta-BHC	319-85-7	8081B	ND		3.6	0.64	ug/kg	1
delta-BHC	319-86-8	8081B	ND		3.6	0.68	ug/kg	1
alpha-Chlordane	5103-71-9	8081B	ND		3.6	0.62	ug/kg	1
gamma-Chlordane	5103-74-2	8081B	ND		3.6	0.51	ug/kg	1
4,4'-DDD	72-54-8	8081B	ND		7.0	0.53	ug/kg	1
4,4'-DDE	72-55-9	8081B	ND		7.0	0.68	ug/kg	1
4,4'-DDT	50-29-3	8081B	~~ND~~ UJ		7.0	0.59	ug/kg	1 CCH
Dieldrin	60-57-1	8081B	ND		7.0	0.70	ug/kg	1
Endosulfan I	959-98-8	8081B	ND		3.6	0.72	ug/kg	1
Endosulfan II	33213-65-9	8081B	ND		7.0	0.53	ug/kg	1
Endosulfan sulfate	1031-07-8	8081B	ND		7.0	0.49	ug/kg	1
Endrin	72-20-8	8081B	ND		7.0	0.70	ug/kg	1
Endrin aldehyde	7421-93-4	8081B	ND		7.0	0.64	ug/kg	1
Endrin ketone	53494-70-5	8081B	~~ND~~ UJ		7.0	0.47	ug/kg	1 CCH
Heptachlor	76-44-8	8081B	ND		3.6	0.83	ug/kg	1
Heptachlor epoxide	**1024-57-3**	**8081B**	**3.4**	**J JP**	**3.6**	**0.66**	**ug/kg**	**1 ZC**
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		36	2.8	ug/kg	1 CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		64	19	ug/kg	1 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		81	55-130		109	55-130
Tetrachloro-m-xylene		87	70-125		80	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

NW
3/25/10

Organochlorine Pesticides by GC

Client: **CH2M HILL, Inc.**
Description: **IR86-SD113-10A**
Date Sampled: **03/16/2010 0930**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-007**
Matrix: **Solid**
% Solids: **47.1** **03/17/2010 2329**

7 DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	1	03/20/2010 0420	NCM	03/18/2010 1048	29652
2	3550C	8081B	10	03/20/2010 2144	NCM	03/18/2010 1048	29652

Use original results

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Aldrin	309-00-2	8081B	ND		36	7.2	ug/kg	2
gamma-BHC (Lindane)	58-89-9	8081B	ND		36	7.6	ug/kg	2
alpha-BHC	319-84-6	8081B	ND		36	8.3	ug/kg	2
beta-BHC	319-85-7	8081B	ND		36	6.4	ug/kg	2
delta-BHC	319-86-8	8081B	ND		36	6.8	ug/kg	2
alpha-Chlordane	5103-71-9	8081B	ND		36	6.2	ug/kg	2
gamma-Chlordane	5103-74-2	8081B	ND		36	5.1	ug/kg	2
4,4'-DDD	72-54-8	8081B	ND		70	5.3	ug/kg	2
4,4'-DDE	72-55-9	8081B	ND		70	6.8	ug/kg	2
4,4'-DDT	50-29-3	8081B	~~ND~~ UJ		70	5.9	ug/kg	2 CCH
Dieldrin	60-57-1	8081B	ND		70	7.0	ug/kg	2
Endosulfan I	959-98-8	8081B	ND		36	7.2	ug/kg	2
Endosulfan II	33213-65-9	8081B	ND		70	5.3	ug/kg	2
Endosulfan sulfate	1031-07-8	8081B	ND		70	4.9	ug/kg	2
Endrin	72-20-8	8081B	ND		70	7.0	ug/kg	2
Endrin aldehyde	7421-93-4	8081B	ND		70	6.4	ug/kg	2
Endrin ketone	53494-70-5	8081B	ND		70	4.7	ug/kg	2
Heptachlor	76-44-8	8081B	ND		36	8.3	ug/kg	2
Heptachlor epoxide	1024-57-3	8081B	ND		36	6.6	ug/kg	2
Methoxychlor	72-43-5	8081B	~~ND~~ UJ		360	28	ug/kg	2 CCH
Toxaphene	8001-35-2	8081B	~~ND~~ R		640	190	ug/kg	2 BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Decachlorobiphenyl		81	55-130		109	55-130
Tetrachloro-m-xylene		87	70-125		80	70-125

exclude

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

LW
3/25/10

Client: **CH2M HILL, Inc.**
Description: **IR86-SD112D-10A**
Date Sampled: **03/16/2010 0930**
Date Received: **03/17/2010**

Laboratory ID: **LC17029-008**
Matrix: **Solid**
% Solids: **28.0** **03/17/2010 2329**

8DL

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3550C	8081B	10	03/20/2010 2332	NCM	03/18/2010 1048	29652

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run	
Aldrin	309-00-2	8081B	ND		60	12	ug/kg	1	
gamma-BHC (Lindane)	58-89-9	8081B	ND		60	13	ug/kg	1	
alpha-BHC	319-84-6	8081B	ND		60	14	ug/kg	1	
beta-BHC	319-85-7	8081B	ND		60	11	ug/kg	1	
delta-BHC	319-86-8	8081B	ND		60	11	ug/kg	1	
alpha-Chlordane	5103-71-9	8081B	ND		60	10	ug/kg	1	
gamma-Chlordane	5103-74-2	8081B	ND		60	8.5	ug/kg	1	
4,4'-DDD	72-54-8	8081B	ND		120	8.8	ug/kg	1	
4,4'-DDE	72-55-9	8081B	ND		120	11	ug/kg	1	
4,4'-DDT	50-29-3	8081B	ND	UJ	120	9.9	ug/kg	1	CCH
Dieldrin	60-57-1	8081B	ND		120	12	ug/kg	1	
Endosulfan I	959-98-8	8081B	ND		60	12	ug/kg	1	
Endosulfan II	33213-65-9	8081B	ND		120	8.8	ug/kg	1	
Endosulfan sulfate	1031-07-8	8081B	ND		120	8.1	ug/kg	1	
Endrin	72-20-8	8081B	ND		120	12	ug/kg	1	
Endrin aldehyde	7421-93-4	8081B	ND		120	11	ug/kg	1	
Endrin ketone	53494-70-5	8081B	ND		120	7.7	ug/kg	1	
Heptachlor	76-44-8	8081B	ND		60	14	ug/kg	1	
Heptachlor epoxide	1024-57-3	8081B	ND		60	11	ug/kg	1	
Methoxychlor	72-43-5	8081B	ND	UJ	600	47	ug/kg	1	CCH
Toxaphene	8001-35-2	8081B	ND	R	1100	320	ug/kg	1	BSL

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Decachlorobiphenyl		97	55-130
Tetrachloro-m-xylene		84	70-125

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
H = Out of holding time

UW
3/25/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: SD1372

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: April 15, 2010

Laboratory: Katahdin Analytical Services, Scarborough, Maine Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-TB01031710	SD1372-1	Water
2	IR86-EB02031610	SD1372-2	Water
3	IR86-EB01031710	SD1372-3	Water
4	IR86-FB01031710	SD1372-4	Water
5	IR86-GW52IW-10A	SD1372-5	Water
5RE	IR86-GW52IW-10ARE	SD1372-5RA	Water
6	IR86-GW52IWD-10A	SD1372-6	Water
7	IR86-GW53IW-10A	SD1372-7	Water
7MS	IR86-GW53IW-10AMS	SD1372-7MS	Water
7MSD	IR86-GW53IW-10AMSD	SD1372-7MSD	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
03/19/10	Chloroethane	27.91%	J/UJ	5RE

Surrogates - All samples exhibited acceptable surrogate recovery values except the following.

Sample ID	Surrogate	%R	Qualifier
5	1,2-Dichloroethane-d4	124%	J - Positive results
5RE	1,2-Dichloroethane-d4	124%	J - Positive results
7	1,2-Dichloroethane-d4	124%	None - All ND

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
7	12 Compounds	High MS/MSD %R	None - Sample ND

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01031710	None - ND	-	-	-	-
IR86-EB02031610	Acetone	3	30	None	All >10X
IR86-EB01031710	Acetone	3	30	None	All >10X
IR86-FB01031710	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW52IW-10A ug/L	IR86-GW52IWD-10A ug/L	RPD	Qualifier
Acetone	47	42	11%	None
2-Butanone	4	4	0%	None
Toluene	0.4	0.4	0%	None
Ethylbenzene	0.3	0.3	0%	None

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 12:20
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-1
Client ID: IR86-TB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	U	5	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

NW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 12:20
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-1
Client ID: IR86-TB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		103%				
2037-26-5	Toluene-D8		109%				
17060-07-0	1,2-Dichloroethane-D4		111%				
1868-53-7	Dibromofluoromethane		102%				

NW
4/15/10

2

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/16/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 12:52
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-2
Client ID: IR86-EB02031610
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	J	3	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

hw
4/15/10

2

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/16/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 12:52
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-2
Client ID: IR86-EB02031610
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		99%				
2037-26-5	Toluene-D8		109%				
17060-07-0	1,2-Dichloroethane-D4		114%				
1868-53-7	Dibromofluoromethane		101%				

KW
4/15/10

3

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 13:24
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-3
Client ID: IR86-EB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	J	3	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

MW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

3

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 13:24
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-3
Client ID: IR86-EB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		99%				
2037-26-5	Toluene-D8		98%				
17060-07-0	1,2-Dichloroethane-D4		111%				
1868-53-7	Dibromofluoromethane		105%				

NW
4/15/10

4

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 13:55
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-4
Client ID: IR86-FB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	U	5	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

NW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

4

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 13:55
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-4
Client ID: IR86-FB01031710
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		98%				
2037-26-5	Toluene-D8		110%				
17060-07-0	1,2-Dichloroethane-D4		112%				
1868-53-7	Dibromofluoromethane		104%				

hw
4/15/10

5

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 18:42
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-5
Client ID: IR86-GW52IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL	
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2	
74-87-3	Chloromethane	U	2	1.0	2	2	0.4	
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2	
74-83-9	Bromomethane	U	2	1.0	2	2	0.5	
75-00-3	Chloroethane	U	2	1.0	2	2	0.6	
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2	
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4	
76-13-1	Freon-113	U	1	1.0	1	1	0.3	
67-64-1	Acetone	J	47	1.0	5	5	2	SSH
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2	
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5	
75-09-2	Methylene Chloride	U	5	1.0	5	5	1	
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4	
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2	
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
78-93-3	2-Butanone	~~U~~ J	4	1.0	5	5	1	SSH
67-66-3	Chloroform	U	1	1.0	1	1	0.3	
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2	
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3	
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2	
71-43-2	Benzene	U	1	1.0	1	1	0.3	
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2	
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3	
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3	
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2	
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3	
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2	
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1	
108-88-3	Toluene	~~U~~ J	0.4	1.0	1	1	0.3	SSH
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2	
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3	
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4	
591-78-6	2-Hexanone	U	5	1.0	5	5	2	
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3	
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2	
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2	
100-41-4	Ethylbenzene	~~U~~ J	0.3	1.0	1	1	0.2	SSH
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2	
100-42-5	Styrene	U	1	1.0	1	1	0.2	
75-25-2	Bromoform	U	1	1.0	1	1	0.2	
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2	
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4	

hw
4/15/10

5

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 18:42
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-5
Client ID: IR86-GW52IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		104%				
2037-26-5	Toluene-D8		108%				
17060-07-0	1,2-Dichloroethane-D4		*124%				
1868-53-7	Dibromofluoromethane		111%				

hw
4/15/10

5RE

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 19-MAR-2010 16:21
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-5RA
Client ID: IR86-GW52IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75351
Units: ug/l

Use original results

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL	
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2	
74-87-3	Chloromethane	U	2	1.0	2	2	0.4	
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2	
74-83-9	Bromomethane	U	2	1.0	2	2	0.5	
75-00-3	Chloroethane	~~U~~ UJ	2	1.0	2	2	0.6	CCH
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2	
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4	
76-13-1	Freon-113	U	1	1.0	1	1	0.3	
67-64-1	Acetone	J	38	1.0	5	5	2	SSH
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2	
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5	
75-09-2	Methylene Chloride	U	5	1.0	5	5	1	
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4	
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2	
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
78-93-3	2-Butanone	~~J~~ J	4	1.0	5	5	1	SSH
67-66-3	Chloroform	U	1	1.0	1	1	0.3	
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2	
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3	
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2	
71-43-2	Benzene	U	1	1.0	1	1	0.3	
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2	
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3	
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3	
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2	
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3	
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2	
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1	
108-88-3	Toluene	~~J~~ J	0.4	1.0	1	1	0.3	SSH
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2	
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3	
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4	
591-78-6	2-Hexanone	U	5	1.0	5	5	2	
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3	
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2	
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2	
100-41-4	Ethylbenzene	~~J~~ J	0.3	1.0	1	1	0.2	SSH
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2	
100-42-5	Styrene	U	1	1.0	1	1	0.2	
75-25-2	Bromoform	U	1	1.0	1	1	0.2	
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2	
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4	

Exclude

hw
4/15/10

5RE

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 19-MAR-2010 16:21
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-5RA
Client ID: IR86-GW52IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75351
Units: ug/l

use original results

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		104%				
2037-26-5	Toluene-D8		114%				
17060-07-0	1,2-Dichloroethane-D4		*124%				
1868-53-7	Dibromofluoromethane		109%				

Page 02 of 02 E9165.D

exclude

NW
4/15/10

6

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 19:14
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-6
Client ID: IR86-GW52IWD-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone		42	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	J	4	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	J	0.4	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	J	0.3	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

NW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

6

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/17/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 19:14
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-6
Client ID: IR86-GW52IWD-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		102%				
2037-26-5	Toluene-D8		111%				
17060-07-0	1,2-Dichloroethane-D4		118%				
1868-53-7	Dibromofluoromethane		109%				

NW
4/15/10

7

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/16/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 19:46
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-7
Client ID: IR86-GW53IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	U	2	1.0	2	2	0.6
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	U	5	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

NW
4/15/10

7

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 Site 86
PO No:
Sample Date: 03/16/19
Received Date: 03/18/10
Extraction Date:
Analysis Date: 18-MAR-2010 19:46
Report Date: 03/22/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1372-7
Client ID: IR86-GW53IW-10A
SDG: SD1372
Extracted by:
Extraction Method: SW846 5030
Analyst: HCG
Analysis Method: SW846 8260B
Lab Prep Batch: WG75285
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		105%				
2037-26-5	Toluene-D8		114%				
17060-07-0	1,2-Dichloroethane-D4		*124%				
1868-53-7	Dibromofluoromethane		110%				

MW
4/15/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS
USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: SD1510

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: April 15, 2010

Laboratory: Katahdin Analytical Services, Scarborough, Maine Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-GW65-10A	SD1510-1	Water
2	IR86-TB032410	SD1510-2	Water
3	IR86-EB032410	SD1510-3	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
03/25/10	Chloroethane	35.17%	J/UJ	All Samples

Surrogates - All samples exhibited acceptable surrogate recovery values except the following.

Sample ID	Surrogate	%R	Qualifier
1	1,2-Dichloroethane-d4	124%	J - Positive results
2	1,2-Dichloroethane-d4	128%	None - All ND
3	1,2-Dichloroethane-d4	124%	None - All ND

MS/MSD - A MS/MSD sample was not analyzed.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB032410	None - ND	-	-	-	-
IR86-EB032410	None - ND	-	-	-	-

Field Duplicates - Field duplicate samples were not analyzed.

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

1

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 19:08
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-1
Client ID: IR86-GW65-10A
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL	
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2	
74-87-3	Chloromethane	U	2	1.0	2	2	0.4	
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2	
74-83-9	Bromomethane	U	2	1.0	2	2	0.5	
75-00-3	Chloroethane	~~U~~ UJ	2	1.0	2	2	0.6	CCH
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2	
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4	
76-13-1	Freon-113	U	1	1.0	1	1	0.3	
67-64-1	Acetone	U	5	1.0	5	5	2	
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2	
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5	
75-09-2	Methylene Chloride	U	5	1.0	5	5	1	
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4	
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2	
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2	
78-93-3	2-Butanone	U	5	1.0	5	5	1	
67-66-3	Chloroform	~~U~~ J	0.5	1.0	1	1	0.3	SSH
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2	
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3	
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2	
71-43-2	Benzene	U	1	1.0	1	1	0.3	
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2	
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3	
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3	
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2	
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3	
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2	
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1	
108-88-3	Toluene	U	1	1.0	1	1	0.3	
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2	
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3	
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4	
591-78-6	2-Hexanone	U	5	1.0	5	5	2	
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3	
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2	
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2	
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2	
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2	
100-42-5	Styrene	U	1	1.0	1	1	0.2	
75-25-2	Bromoform	U	1	1.0	1	1	0.2	
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2	
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4	

NW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 19:08
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-1
Client ID: IR86-GW65-10A
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		104%				
2037-26-5	Toluene-D8		110%				
17060-07-0	1,2-Dichloroethane-D4		*124%				
1868-53-7	Dibromofluoromethane		111%				

hw
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

2

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 18:04
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-2
Client ID: IR86-TB032410
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	~~U~~ UJ	2	1.0	2	2	0.6 CCH
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	U	5	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

MW
4/15/10

2

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 18:04
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-2
Client ID: IR86-TB032410
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		103%				
2037-26-5	Toluene-D8		114%				
17060-07-0	1,2-Dichloroethane-D4		*128%				
1868-53-7	Dibromofluoromethane		114%				

NW
4/15/10

3

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 18:36
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-3
Client ID: IR86-EB032410
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
75-71-8	Dichlorodifluoromethane	U	2	1.0	2	2	0.2
74-87-3	Chloromethane	U	2	1.0	2	2	0.4
75-01-4	Vinyl chloride	U	2	1.0	2	2	0.2
74-83-9	Bromomethane	U	2	1.0	2	2	0.5
75-00-3	Chloroethane	~~U~~ UJ	2	1.0	2	2	0.6 CCH
75-69-4	Trichlorofluoromethane	U	2	1.0	2	2	0.2
75-35-4	1,1-Dichloroethene	U	1	1.0	1	1	0.4
76-13-1	Freon-113	U	1	1.0	1	1	0.3
67-64-1	Acetone	U	5	1.0	5	5	2
75-15-0	Carbon Disulfide	U	1	1.0	1	1	0.2
79-20-9	Methyl Acetate	U	1	1.0	1	1	0.5
75-09-2	Methylene Chloride	U	5	1.0	5	5	1
156-60-5	trans-1,2-Dichloroethene	U	1	1.0	1	1	0.2
1634-04-4	Methyl tert-butyl ether	U	2	1.0	2	2	0.4
75-34-3	1,1-Dichloroethane	U	1	1.0	1	1	0.2
156-59-2	cis-1,2-Dichloroethene	U	1	1.0	1	1	0.2
78-93-3	2-Butanone	U	5	1.0	5	5	1
67-66-3	Chloroform	U	1	1.0	1	1	0.3
71-55-6	1,1,1-Trichloroethane	U	1	1.0	1	1	0.2
1735-17-7	Cyclohexane	U	1	1.0	1	1	0.3
56-23-5	Carbon Tetrachloride	U	1	1.0	1	1	0.2
71-43-2	Benzene	U	1	1.0	1	1	0.3
107-06-2	1,2-Dichloroethane	U	1	1.0	1	1	0.2
79-01-6	Trichloroethene	U	1	1.0	1	1	0.3
108-87-2	Methylcyclohexane	U	1	1.0	1	1	0.3
78-87-5	1,2-Dichloropropane	U	1	1.0	1	1	0.2
75-27-4	Bromodichloromethane	U	1	1.0	1	1	0.3
10061-01-5	cis-1,3-dichloropropene	U	1	1.0	1	1	0.2
108-10-1	4-methyl-2-pentanone	U	5	1.0	5	5	1
108-88-3	Toluene	U	1	1.0	1	1	0.3
10061-02-6	trans-1,3-Dichloropropene	U	1	1.0	1	1	0.2
79-00-5	1,1,2-Trichloroethane	U	1	1.0	1	1	0.3
127-18-4	Tetrachloroethene	U	1	1.0	1	1	0.4
591-78-6	2-Hexanone	U	5	1.0	5	5	2
124-48-1	Dibromochloromethane	U	1	1.0	1	1	0.3
106-93-4	1,2-Dibromoethane	U	1	1.0	1	1	0.2
108-90-7	Chlorobenzene	U	1	1.0	1	1	0.2
100-41-4	Ethylbenzene	U	1	1.0	1	1	0.2
1330-20-7	Xylenes (total)	U	3	1.0	3	3	0.2
100-42-5	Styrene	U	1	1.0	1	1	0.2
75-25-2	Bromoform	U	1	1.0	1	1	0.2
98-82-8	Isopropylbenzene	U	1	1.0	1	1	0.2
79-34-5	1,1,2,2-Tetrachloroethane	U	1	1.0	1	1	0.4

MW
4/15/10

KATAHDIN ANALYTICAL SERVICES
Report of Analytical Results

3

Client: CH2MHill
Project: CTO-081 SITE 86 389017.FI.FS.86
PO No:
Sample Date: 03/24/10
Received Date: 03/25/10
Extraction Date:
Analysis Date: 25-MAR-2010 18:36
Report Date: 03/29/2010
Matrix: WATER
% Solids: NA

Lab ID: SD1510-3
Client ID: IR86-EB032410
SDG: SD1510
Extracted by:
Extraction Method: SW846 5030
Analyst: DJP
Analysis Method: SW846 8260B
Lab Prep Batch: WG75549
Units: ug/l

CAS#	Compound	Flags	Results	DF	PQL	Adj.PQL	Adj.MDL
541-73-1	1,3-Dichlorobenzene	U	1	1.0	1	1	0.3
106-46-7	1,4-Dichlorobenzene	U	1	1.0	1	1	0.2
95-50-1	1,2-Dichlorobenzene	U	1	1.0	1	1	0.2
96-12-8	1,2-Dibromo-3-Chloropropane	U	1	1.0	1	1	0.5
120-82-1	1,2,4-Trichlorobenzene	U	1	1.0	1	1	0.4
460-00-4	P-Bromofluorobenzene		98%				
2037-26-5	Toluene-D8		113%				
17060-07-0	1,2-Dichloroethane-D4		*124%				
1868-53-7	Dibromofluoromethane		109%				

NW
4/15/10

ENVIRONMENTAL
Data Services, Inc.

VOLATILE ORGANIC COMPOUNDS

USEPA Region IV - Level IV Review

Site: MCB Camp Lejeune, Site 86, CTO-081 SDG #: SD3781

Client: CH2M HILL, Inc., Virginia Beach, Virginia Date: July 8, 2010

Laboratory: Katahdin Analytical Services, Scarborough, Maine Reviewer: Nancy Weaver

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR86-TB01062810	SD3781-1	Water
2	IR86-EB01062810	SD3781-2	Water
3	IR86-FB01062810	SD3781-3	Water
4	IR86-GW66IW-10B	SD3781-4	Water
4MS	IR86-GW66IW-10BMS	SD3781-4MS	Water
4MSD	IR86-GW66IW-10BMSD	SD3781-4MSD	Water
5	IR86-GW66IWD-10B	SD3781-5	Water

The USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, and professional judgement were used in evaluating the data in this summary report.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
06/29/10	2-Butanone	31.10%	J/UJ	All Samples

Surrogates - All samples exhibited acceptable surrogate recovery values except the following.

Sample ID	Surrogate	%R	Qualifier
All Samples	1,2-Dichloroethane-d4 Dibromofluoromethane	High	None - All ND

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
4	Cyclohexane	137%/140%/Ok	None - Sample ND
	Methylcyclohexane	140%/136%/Ok	

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
IR86-TB01062810	None - ND	-	-	-	-
IR86-EB01062810	None - ND	-	-	-	-
IR86-FB01062810	None - ND	-	-	-	-

Field Duplicates - Field duplicate results are summarized below.

Compound	IR86-GW66IW-10B ug/L	IR86-GW66IWD-10B ug/L	RPD	Qualifier
None	ND	ND	-	-

Tentatively Identified Compounds (TICs) - TICs were not reported.

Compound Quantitation - No discrepancies were identified.

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-1
Client ID: IR86-TB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.35	0.50
Freon-113	U	0.50	ug/L	1	5	5.0	0.31	0.50
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
Carbon Disulfide	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl Acetate	U	0.75	ug/L	1	5	5.0	0.53	0.75
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	5	5.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.21	0.50
2-Butanone	~~U~~ UJ	2.5	ug/L	1	5	5.0	1.3	2.5 CCH
Chloroform	U	0.50	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Cyclohexane	U	0.50	ug/L	1	5	5.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	5	5.0	0.22	0.50
Benzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	5	5.0	0.28	0.50
Methylcyclohexane	U	0.50	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.19	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Toluene	U	0.50	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	5	5.0	0.40	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Dibromochloromethane	U	0.50	ug/L	1	5	5.0	0.30	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

LW 7/8/10

Katahdin
ANALYTICAL SERVICES

Accredited in accordance with nelac
Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-1
Client ID: IR86-TB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
1,2-Dibromoethane	U	0.50	ug/L	1	5	5.0	0.22	0.50
Chlorobenzene	U	0.50	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	0.50	ug/L	1	5	5.0	0.21	0.50
M+P-Xylenes	U	1.0	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Xylenes (Total)	U	1.5	ug/L	1	15	15.	0.25	1.5
Styrene	U	0.50	ug/L	1	5	5.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	5	5.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	0.75	ug/L	1	5	5.0	0.50	0.75
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	5	5.0	0.37	0.50
1,2-Dichloroethane-d4	*	125.	%					
Toluene-d8		117	%					
P-Bromofluorobenzene		108.	%					
Dibromofluoromethane	*	124.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

MW
7/8/10

Katahdin
ANALYTICAL SERVICES

2

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-2
Client ID: IR86-EB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.35	0.50
Freon-113	U	0.50	ug/L	1	5	5.0	0.31	0.50
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
Carbon Disulfide	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl Acetate	U	0.75	ug/L	1	5	5.0	0.53	0.75
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	5	5.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.21	0.50
2-Butanone	~~U~~ UJ	2.5	ug/L	1	5	5.0	1.3	2.5 CCH
Chloroform	U	0.50	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Cyclohexane	U	0.50	ug/L	1	5	5.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	5	5.0	0.22	0.50
Benzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	5	5.0	0.28	0.50
Methylcyclohexane	U	0.50	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.19	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Toluene	U	0.50	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	5	5.0	0.40	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Dibromochloromethane	U	0.50	ug/L	1	5	5.0	0.30	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

NW
7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

2

ACCREDITED IN ACCORDANCE WITH nelac
Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-2
Client ID: IR86-EB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
1,2-Dibromoethane	U	0.50	ug/L	1	5	5.0	0.22	0.50
Chlorobenzene	U	0.50	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	0.50	ug/L	1	5	5.0	0.21	0.50
M+P-Xylenes	U	1.0	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Xylenes (Total)	U	1.5	ug/L	1	15	15.	0.25	1.5
Styrene	U	0.50	ug/L	1	5	5.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	5	5.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	0.75	ug/L	1	5	5.0	0.50	0.75
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	5	5.0	0.37	0.50
1,2-Dichloroethane-d4	*	127.	%					
Toluene-d8		117	%					
P-Bromofluorobenzene		110.	%					
Dibromofluoromethane	*	124.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

MW
7/8/10

Katahdin
ANALYTICAL SERVICES

Accredited in accordance with nelac 3
Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-3
Client ID: IR86-FB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.35	0.50
Freon-113	U	0.50	ug/L	1	5	5.0	0.31	0.50
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
Carbon Disulfide	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl Acetate	U	0.75	ug/L	1	5	5.0	0.53	0.75
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	5	5.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.21	0.50
2-Butanone	~~U~~ UJ	2.5	ug/L	1	5	5.0	1.3	2.5 CCH
Chloroform	U	0.50	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Cyclohexane	U	0.50	ug/L	1	5	5.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	5	5.0	0.22	0.50
Benzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	5	5.0	0.28	0.50
Methylcyclohexane	U	0.50	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.19	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Toluene	U	0.50	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	5	5.0	0.40	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Dibromochloromethane	U	0.50	ug/L	1	5	5.0	0.30	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

NW
7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Accredited in accordance with nelac
Cert No E87604

3

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-3
Client ID: IR86-FB01062810
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
1,2-Dibromoethane	U	0.50	ug/L	1	5	5.0	0.22	0.50
Chlorobenzene	U	0.50	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	0.50	ug/L	1	5	5.0	0.21	0.50
M+P-Xylenes	U	1.0	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Xylenes (Total)	U	1.5	ug/L	1	15	15.	0.25	1.5
Styrene	U	0.50	ug/L	1	5	5.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	5	5.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	0.75	ug/L	1	5	5.0	0.50	0.75
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	5	5.0	0.37	0.50
1,2-Dichloroethane-d4	*	126.	%					
Toluene-d8		118.	%					
P-Bromofluorobenzene		110.	%					
Dibromofluoromethane	*	123.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

NW
7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Accredited in accordance with nelac
Cert No E87604

4

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-4
Client ID: IR86-GW66IW-10B
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.35	0.50
Freon-113	U	0.50	ug/L	1	5	5.0	0.31	0.50
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
Carbon Disulfide	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl Acetate	U	0.75	ug/L	1	5	5.0	0.53	0.75
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	5	5.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.21	0.50
2-Butanone	~~U~~ UJ	2.5	ug/L	1	5	5.0	1.3	2.5 CCH
Chloroform	U	0.50	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Cyclohexane	U	0.50	ug/L	1	5	5.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	5	5.0	0.22	0.50
Benzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	5	5.0	0.28	0.50
Methylcyclohexane	U	0.50	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.19	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Toluene	U	0.50	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	5	5.0	0.40	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Dibromochloromethane	U	0.50	ug/L	1	5	5.0	0.30	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

MW 7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Cert No E87604

4

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-4
Client ID: IR86-GW66IW-10B
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
1,2-Dibromoethane	U	0.50	ug/L	1	5	5.0	0.22	0.50
Chlorobenzene	U	0.50	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	0.50	ug/L	1	5	5.0	0.21	0.50
M+P-Xylenes	U	1.0	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Xylenes (Total)	U	1.5	ug/L	1	15	15.	0.25	1.5
Styrene	U	0.50	ug/L	1	5	5.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	5	5.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	0.75	ug/L	1	5	5.0	0.50	0.75
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	5	5.0	0.37	0.50
1,2-Dichloroethane-d4	*	127.	%					
Toluene-d8		119	%					
P-Bromofluorobenzene		107.	%					
Dibromofluoromethane	*	123.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

NW 7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

5

Cert No E87604

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-5
Client ID: IR86-GW66IWD-10B
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	1.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	1.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	1.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	1.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	1.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.35	0.50
Freon-113	U	0.50	ug/L	1	5	5.0	0.31	0.50
Acetone	U	2.5	ug/L	1	5	5.0	2.2	2.5
Carbon Disulfide	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl Acetate	U	0.75	ug/L	1	5	5.0	0.53	0.75
Methylene Chloride	U	2.5	ug/L	1	5	5.0	1.1	2.5
trans-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	0.50	ug/L	1	5	5.0	0.36	0.50
1,1-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.21	0.50
cis-1,2-Dichloroethene	U	0.50	ug/L	1	5	5.0	0.21	0.50
2-Butanone	~~U~~ UJ	2.5	ug/L	1	5	5.0	1.3	2.5 CCH
Chloroform	U	0.50	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Cyclohexane	U	0.50	ug/L	1	5	5.0	0.31	0.50
Carbon Tetrachloride	U	0.50	ug/L	1	5	5.0	0.22	0.50
Benzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	0.50	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	0.50	ug/L	1	5	5.0	0.28	0.50
Methylcyclohexane	U	0.50	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloropropane	U	0.50	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.19	0.50
4-Methyl-2-Pentanone	U	2.5	ug/L	1	5	5.0	1.3	2.5
Toluene	U	0.50	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	0.50	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	0.50	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	0.50	ug/L	1	5	5.0	0.40	0.50
2-Hexanone	U	2.5	ug/L	1	5	5.0	1.7	2.5
Dibromochloromethane	U	0.50	ug/L	1	5	5.0	0.30	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

MW 7/8/10

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

nelac Cert No E87604

5

Report of Analytical Results

Client: CH2MHill
Lab ID: SD3781-5
Client ID: IR86-GW66IWD-10B
Project: CTO-81 Lejeune Site 86
SDG: SD3781

Sample Date: 28-JUN-10
Received Date: 29-JUN-10
Extract Date: 29-JUN-10
Extracted By: DJP
Extraction Method:
Lab Prep Batch: WG79131

Analysis Date: 29-JUN-10
Analyst: DJP
Analysis Method: SW846 8260B
Matrix: AQ
% Solids: NA
Report Date: 30-JUN-10

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
1,2-Dibromoethane	U	0.50	ug/L	1	5	5.0	0.22	0.50
Chlorobenzene	U	0.50	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	0.50	ug/L	1	5	5.0	0.21	0.50
M+P-Xylenes	U	1.0	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	0.50	ug/L	1	5	5.0	0.25	0.50
Xylenes (Total)	U	1.5	ug/L	1	15	15.	0.25	1.5
Styrene	U	0.50	ug/L	1	5	5.0	0.23	0.50
Bromoform	U	0.50	ug/L	1	5	5.0	0.23	0.50
Isopropylbenzene	U	0.50	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	0.50	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	0.50	ug/L	1	5	5.0	0.15	0.50
1,2-Dibromo-3-Chloropropane	U	0.75	ug/L	1	5	5.0	0.50	0.75
1,2,4-Trichlorobenzene	U	0.50	ug/L	1	5	5.0	0.37	0.50
1,2-Dichloroethane-d4	*	126.	%					
Toluene-d8		116	%					
P-Bromofluorobenzene		110.	%					
Dibromofluoromethane	*	124.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

NW
7/8/10

http://www.katahdinlab.com

Appendix H
Human Health Risk Assessment

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	Surface Soil in Industrial Area	Military Personnel	Adult	Ingestion	On-site	Quant	Military Personnel could contact surface soil while working at the site.
						Dermal Absorption	On-site	Quant	Military Personnel could contact surface soil while working at the site.
				Industrial Worker	Adult	Ingestion	On-site	Quant	Industrial Worker could contact surface soil while working at the site.
						Dermal Absorption	On-site	Quant	Industrial Worker could contact surface soil while working at the site.
				Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance Worker could contact surface soil while working at the site.
						Dermal Absorption	On-site	Quant	Maintenance Worker could contact surface soil while working at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site surface soil.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site surface soil.
					Youth	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site surface soil.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site surface soil.
		Air	Emissions from Surface Soil in Industrial Area	Military Personnel	Adult	Inhalation	On-site	Quant	Personnel may access site for work related activities and inhale vapors and dust from site.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Industrial Worker may access site for work related activities and inhale vapors and dust from the site
				Maintenance Worker	Adult	Inhalation	On-site	Quant	Maintenance workers may inhale vapors and dust from areas of site disturbed during activities at the site.
				Trespasser/Visitor	Adult	Inhalation	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could inhale vapors and dust from areas of site disturbed during activities at the site.
					Youth	Inhalation	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could inhale vapors and dust from areas of site disturbed during activities at the site.
	Surface Soil	Surface Soil	Surface Soil in Flightline Area	Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance Worker could contact surface soil while working at the site.
						Dermal Absorption	On-site	Quant	Maintenance Worker could contact surface soil while working at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Although access to area restricted, trespasser may access site and contact site surface soil.
						Dermal Absorption	On-site	Quant	Although access to area restricted, trespasser may access site and contact site surface soil.
					Youth	Ingestion	On-site	Quant	Although access to area restricted, trespasser may access site and contact site surface soil.
						Dermal Absorption	On-site	Quant	Although access to area restricted, trespasser may access site and contact site surface soil.
		Air	Surface Soil in Flightline Area	Maintenance Worker	Adult	Inhalation	On-site	Quant	Maintenance workers may inhale vapors and dust from areas of site disturbed during activities at the site.
				Trespasser/Visitor	Adult	Inhalation	On-site	Quant	Althought access to site is restricted, trespasser/visitor could inhale vapors and dust from areas of site disturbed during activities at the site.
					Youth	Inhalation	On-site	Quant	Although access to site is restricted, trespasser/visitor could inhale vapors and dust from areas of site disturbed during activities at the site.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future (cont'd)	Surface Water	Surface Water	Pond	Military Personnel	Adult	Ingestion	On-site	Quant	Personnel may access site for work related activities, and while at site may contact surface water in pond.
						Dermal Absorption	On-site	Quant	Personnel may access site for work related activities, and while at site may contact surface water in pond.
				Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact surface water while performing activities at the site.
						Dermal Absorption	On-site	Quant	Maintenance workers could contact surface water while performing activities at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact surface water.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact surface water.
					Youth	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact surface water.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact surface water.
	Surface Water	Surface Water	Drainage Ditch	Trespasser/Visitor	Adult	Ingestion	On-site	Quant	AAlthough access to site is restricted trespasser/visitor could contact surface water after a rain event.
						Dermal Absorption	On-site	Quant	Although access to site is restricted trespasser/visitor could contact surface water after a rain event.
					Youth	Ingestion	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact surface water after a rain event.
						Dermal Absorption	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact surface water after a rain event.
				Maintenance Worker	Adult	Ingestion	On-site	None	Water in drainage ditch is sporatic, therefore, exposure to maintenance worker would be minimal.
						Dermal Absorption	On-site	None	Water in drainage ditch is sporatic, therefore, exposure to maintenance worker would be minimal.
	Sediment	Sediment	Pond	Military Personnel	Adult	Ingestion	On-site	Quant	Personnel may access site for work related activities, and while at site may contact sediment in pond.
						Dermal Absorption	On-site	Quant	Personnel may access site for work related activities, and while at site may contact sediment in pond.
				Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact sediment while performing activities at the site.
						Dermal Absorption	On-site	Quant	Maintenance workers could contact sediment while performing activities at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site sediment.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site sediment.
					Youth	Ingestion	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site sediment.
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base; trespasser/visitor could contact site sediment.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future (cont'd)	Sediment	Sediment	Drainage Ditch	Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact sediment while performing activities at the site.
						Dermal Absorption	On-site	Quant	Maintenance workers could contact sediment while performing activities at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact site sediment.
						Dermal Absorption	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact site sediment.
					Youth	Ingestion	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact site sediment.
						Dermal Absorption	On-site	Quant	Although access to site is restricted, trespasser/visitor could contact site sediment.
	Surface Water/ Sediment	Fish	Pond	Trespasser/Visitor	Adult	Ingestion	On-site	Qual	People may fish in the pond, however only catch and release fishing is permitted and the fish are not likely ingested.
					Child	Ingestion	On-site	Qual	People may fish in the pond, however only catch and release fishing is permitted and the fish are not likely ingested.
			Drainage Ditch	Trespasser/Visitor	Adult	Ingestion	On-site	None	Water in drainage ditch is sporatic and does not support fish.
					Child	Ingestion	On-site	None	Water in drainage ditch is sporatic and does not support fish.
	Groundwater	Air	Surficial and Upper Castle-Hayne Aquifer-Vapor Intrusion to Indoor Air	Military Personnel	Adult	Inhalation	On-site	Qual	Site included in basewide vapor intrusion study which concluded no significant risk under current conditions.
				Industrial Worker	Adult	Inhalation	On-site	Qual	Site included in basewide vapor intrusion study which concluded no significant risk under current conditions.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Water	Surface Water	Pond	Construction Worker	Adult	Ingestion	On-site	Quant	Construction workers could contact site surface water during construction activities. Exposure would be similar to current/future maintenance worker exposure.
						Dermal Absorption	On-site	Quant	Construction workers could contact site surface water during construction activities. Exposure would be similar to current/future maintenance worker exposure.
				Resident	Adult	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
					Child	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
			Drainage Ditch	Construction Worker	Adult	Ingestion	On-site	None	Water in drainage ditch is sporatic, therefore, exposure to construction worker would be minimal.
						Dermal Absorption	On-site	None	Water in drainage ditch is sporatic, therefore, exposure to construction worker would be minimal.
				Resident	Adult	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
					Child	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
	Sediment	Sediment	Pond	Construction Worker	Adult	Ingestion	On-site	Quant	Construction workers could contact site sediment during construction activities. Exposure would be similar to current/future maintenance worker exposure.
						Dermal Absorption	On-site	Quant	Construction workers could contact sediment during construction activities. Exposure would be similar to current/future maintenance worker exposure.
			Drainage Ditch	Construction Worker	Adult	Ingestion	On-site	Quant	Construction workers could contact site sediment during construction activities. Exposure would be similar to current/future maintenance worker exposure.
						Dermal Absorption	On-site	Quant	Construction workers could contact sediment during construction activities. Exposure would be similar to current/future maintenance worker exposure.
				Resident	Adult	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
					Child	Ingestion	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.
						Dermal Absorption	On-site	Qual	Exposure to surface water and sediment by future resident wou1d be similar to that of a visitor/trespasser.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil*	Soil*	Soil* from Industrial and Flight Line Areas	Resident	Adult	Ingestion	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
						Dermal Absorption	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
					Child	Ingestion	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
						Dermal Absorption	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
					Child/Adult	Ingestion	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
						Dermal Absorption	On-site	Quant	Although unlikely, if site used for future residential development, residents could contact soil.
				Construction Worker	Adult	Ingestion	On-site	Quant	Future construction workers could contact soil while performing activities at the site.
						Dermal Absorption	On-site	Quant	Future construction workers could contact soil while performing activities at the site.
				Military Personnel	Adult	Ingestion	On-site	Quant	Future Military Personnel could contact soil while working or training at the site.
						Dermal Absorption	On-site	Quant	Future Military Personnel could contact soil while working or training at the site.
				Maintenance Worker	Adult	Ingestion	On-site	Qual	Exposure to future maintenance worker is expected to be less than industrial worker exposure. Therefore, this receptor not evaluated quantitatively, but evaluated qualitatively based on industrial worker exposure.
						Dermal Absorption	On-site	Qual	Exposure to future maintenance worker is expected to be less than industrial worker exposure. Therefore, this receptor not evaluated quantitatively, but evaluated qualitatively based on industrial worker exposure.
				Industrial Worker	Adult	Ingestion	On-site	Quant	Industrial Worker could contact soil while working at the site.
						Dermal Absorption	On-site	Quant	Industrial Worker could contact soil while working at the site.
				Trespasser/Visitor	Adult	Ingestion	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could contact site soil
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could contact site soil
					Youth	Ingestion	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could contact site soil
						Dermal Absorption	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could contact site soil
		Air	Emissions from Soil* from Industrial and Flight Line Areas	Resident	Adult	Inhalation	On-site	Quant	If site used for future residential development, residents could inhale vapors and dust from soil
					Child	Inhalation	On-site	Quant	If site used for future residential development, residents could inhale vapors and dust from soil
					Child/Adult	Inhalation	On-site	Quant	If site used for future residential development, residents could inhale vapors and dust from soil
				Construction Worker	Adult	Inhalation	On-site	Quant	Exposure to emissions from soil
				Military Personnel	Adult	Inhalation	On-site	Quant	Future Military Personnel may inhale vapors and dust from areas of site disturbed soil* during activities at the site.
				Maintenance Worker	Adult	Inhalation	On-site	Qual	Exposure to future maintenance worker is expected to be less than industrial worker exposure. Therefore, this receptor not evaluated quantitatively, but evaluated qualitatively based on industrial worker exposure.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Future Industrial Worker may inhale vapors and dust from areas of site disturbed soil* during activities at the site.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont'd)	Soil*	Air	Emissions from Soil* from Industrial and Flight Line Areas	Trespasser/Visitor	Adult	Inhalation	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could be exposed to dust and vapors in air from site soil*.
					Youth	Inhalation	On-site	Quant	Access to site unlimited for people on base, trespasser/visitor could be exposed to dust and vapors in air from site soil*.
	Groundwater	Groundwater	Surficial, and Upper and Middle Castle-Hayne Aquifer - Tap Water	Resident	Adult	Ingestion	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply.
						Dermal Absorption	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply.
					Child	Ingestion	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply.
						Dermal Absorption	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply.
					Child/Adult	Ingestion	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply. Child/Adult evaluated for cancer risk only.
						Dermal Absorption	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply. Child/Adult evaluated for cancer risk only.
				Industrial Worker	Adult	Ingestion	On-site	Quant	Future industrial workers may use groundwater as a potable source.
						Dermal	On-site	None	Assumed industrial workers would not shower regularly at site even if groundwater used as a potable water supply.
			Surficial Aquifer - Water in Excavation Pit	Construction Worker	Adult	Ingestion	On-site	None	Ingestion of groundwater during construction activities expected to be minimal.
						Dermal Absorption	On-site	Quant	Construction worker may contact groundwater in an excavation during construction/excavation activities.
		Air	Surficial, and Upper and Middle Castle Hayne Aquifer - Water Vapors at Showerhead	Resident	Adult	Inhalation	On-site	Quant	Although unlikely, groundwater will be evaluated for use as future potable water supply.
					Child	Inhalation	On-site	Quant	Although unlikely, groundwater will be evaluated for use as future potable water supply.
					Child/Adult	Inhalation	On-site	Quant	Although unlikely, groundwater will be evaluated for use as a future potable water supply. Child/Adult evaluated for cancer risk only.
				Industrial Worker	Adult	Inhalation	On-site	None	Assumed industrial workers would not shower regularly at site even if groundwater used as a potable water supply.
			Surficial Aquifer - Water Vapors in Excavation Pit	Construction Worker	Adult	Inhalation	On-site	Quant	Construction worker may inhale vapors from groundwater in an open excavation during construction/excavation activities.
			Surficial, and Upper and Middle Castle-Hayne Aquifer-Vapor Intrusion to Indoor Air	Resident	Adult	Inhalation	On-site	Quant	Future resident could inhale vapors migrating from groundwater in indoor air if future resident constructed on site.
					Child	Inhalation	On-site	Quant	Future resident could inhale vapors migrating from groundwater into indoor air if future resident constructed on site.
					Child/Adult	Inhalation	On-site	Quant	Future resident could inhale vapors migrating from groundwater into indoor air if future resident constructed on site. Child/Adult evaluated for cancer risk only.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Future industrial workers could inhale vapors migrating from groundwater into indoor air if future industrial building constructed on site.

TABLE H1

Selection of Exposure Pathways

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway

*Soil = combined surface and subsurface soil.

Quant: will be quantitatively evaluated.

Qual: will be qualitatively evaluated.

None: Not considered to be a complete pathway, therefore, not evaluated.

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

TABLE H 2.1

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Soil in Industrial Area	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.4E+02 NS	1.2E+00	Csoil	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	5.6E-01 C	1.2E-03	Csoil	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	9.1E+02 NS	9.2E+03	Csoil	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	3.3E+00 C	3.0E-02	Csoil	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.4E+02 N	4.6E-02	Csoil	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.2E+00 C**	2.2E+00	Csoil	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	5.4E-03 C	2.5E-04	Csoil	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	3.4E-02 C	9.7E-05	Csoil	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.9E+02 NS	2.4E-01	Csoil	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	4.3E-01 C	2.0E-03	Csoil	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	8.9E-01 C*	3.3E-03	Csoil	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.4E+00 C	7.6E+00	Csoil	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.4E+00 C	7.0E-02	Csoil	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/16	0.011 - 0.021	2.1E-02	N/A	2.8E+03 N	1.6E+01	Csoil	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/16	0.011 - 0.021	2.1E-02	N/A	2.1E+01 N	1.2E+00	Csoil	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/16	0.011 - 0.021	2.1E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	4.9E-03 J	4.9E-03 J	MG/KG	IR86-SS100-09D	1/16	0.012 - 0.037	4.9E-03	N/A	6.1E+03 N	2.4E+01	Csoil	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.1E+00 C*	7.3E-03	Csoil	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.7E-01 C	2.9E-03	Csoil	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/16	0.011 - 0.021	2.1E-02	N/A	6.1E+01 C*	1.9E-02	Csoil	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/16	0.011 - 0.021	2.1E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	8.2E+01 NS	3.8E+00	Csoil	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.1E-01 C	2.0E-03	Csoil	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.9E+01 N	4.5E-01	Csoil	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.5E+03 NS	1.6E+01	Csoil	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.9E-01 C	3.4E-01	Csoil	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.2E+01 N	1.5E-02	Csoil	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.6E+01 N	3.6E-01	Csoil	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.8E-01 C	1.9E-03	Csoil	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.8E+01 N	2.9E+01	Csoil	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	5.4E+00 C	8.1E+00	Csoil	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.1E+02 NS	1.3E+00	Csoil	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL

TABLE H 2.1

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	7.4E-03 J	7.4E-03 J	MG/KG	IR86-SS107-0-0_5-09D	1/16	0.0055 - 0.021	7.4E-03	N/A	5.7E+01 NS	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.1E+01 C	2.3E-02	Csoil	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	4.3E+01 C	8.5E-02	Csoil	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.3E+02 NS	9.2E-01	Csoil	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	5.5E-01 C	5.0E-03	Csoil	NO	DLBSL
	108-88-3	Toluene	4.2E-03 J	5.3E-02	MG/KG	IR86-SS107-0-0_5-09D	2/16	0.0055 - 0.021	5.3E-02	N/A	5.0E+02 NS	5.5E+00	Csoil	NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.5E+01 N	5.1E-01	Csoil	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	2.8E+00 C	1.8E-02	Csoil	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	7.9E+01 N	2.4E+01	Csoil	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.0E-02 C	1.9E-04	Csoil	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/16	0.0055 - 0.021	2.1E-02	N/A	6.3E+01 NS	6.0E+00	Csoil	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/13	0.27 - 0.4	4.0E-01	N/A	2.1E+02 NS	4.3E+01	Csoil	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/16	0.27 - 1	1.0E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.2E+02 N	1.4E+00	Csoil	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/15	0.37 - 1	1.0E+00	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.9E+01 N	4.1E-03	Csoil	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.1E+01 N	1.6E+00	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/16	0.27 - 1	1.0E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/16	0.27 - 1	1.0E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/15	0.43 - 1	1.0E+00	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/16	0.073 - 0.4	4.0E-01	N/A	3.1E+01 N	4.0E-01	Csoil	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/16	0.27 - 1	1.0E+00	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/16	0.33 - 1	1.0E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL

TABLE H 2.1

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	7.9E-02	7.9E-02	MG/KG	IR86-SS104-0-0_5-09D	1/16	0.0036 - 0.4	7.9E-02	N/A	3.4E+02 N	8.4E+00	Csoil	NO	BSL
	208-96-8	Acenaphthylene	2.2E-03 J	2.2E-03 J	MG/KG	IR86-SS104-0-0_5-09D	1/16	0.0036 - 0.4	2.2E-03	N/A	3.4E+02 N	1.1E+01	Csoil	NO	BSL
	98-86-2	Acetophenone	8.7E-02 J	8.7E-02 J	MG/KG	IR86-SS02-07D	1/13	0.27 - 0.4	8.7E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	120-12-7	Anthracene	9.2E-04 J	1.4E-01	MG/KG	IR86-SS104-0-0_5-09D	4/16	0.0036 - 0.4	1.4E-01	N/A	1.7E+03 N	6.6E+02	Csoil	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	2.1E+00 C	2.5E-02	Csoil	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	56-55-3	**Benzo(a)anthracene**	**5.7E-03 J**	**2.6E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/16**	**0.0036 - 0.4**	**2.6E-01**	**N/A**	**1.5E-01 C**	**1.8E-01**	**Csoil**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	**5.7E-03 J**	**2.2E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/16**	**0.0036 - 0.4**	**2.2E-01**	**N/A**	**1.5E-02 C**	**5.9E-02**	**Csoil**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**8.1E-03 J**	**2.9E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**8/16**	**0.0036 - 0.4**	**2.9E-01**	**N/A**	**1.5E-01 C**	**6.0E-01**	**Csoil**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	5.3E-03 J	1.9E-01	MG/KG	IR86-SS104-0-0_5-09D	5/16	0.0036 - 0.4	1.9E-01	N/A	1.7E+02 N	3.6E+02	Csoil	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**2.6E-03 J**	**1.9E-01 J**	**MG/KG**	**IR86-SS06-07D : IR86-SS07-07D**	**7/16**	**0.0036 - 0.4**	**1.9E-01**	**N/A**	**1.5E+00 C**	**5.9E+00**	**Csoil**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/16	0.036 - 0.4	4.0E-01	N/A	2.1E-01 C	1.4E-04	Csoil	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	8.3E-02 J	2.9E-01 J	MG/KG	IR86-SS04-07D	4/16	0.27 - 0.4	2.9E-01	N/A	3.5E+01 C*	7.2E+00	Csoil	NO	BSL
	85-68-7	Butylbenzylphthalate	9.9E-02 J	2.4E-01 J	MG/KG	IR86-SS04-07D : IR86-SS06-07D	3/16	0.27 - 0.4	2.4E-01	N/A	2.6E+02 C*	1.5E+02	Csoil	NO	BSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.1E+03 N	1.8E+01	Csoil	NO	DLBSL
	86-74-8	Carbazole	2.9E-02 J	2.9E-02 J	MG/KG	IR86-SS104-0-0_5-09D	1/16	0.27 - 0.4	2.9E-02	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**6.0E-03 J**	**2.6E-01 J**	**MG/KG**	**IR86-SS07-07D**	**7/16**	**0.0036 - 0.4**	**2.6E-01**	**N/A**	**1.5E+01 C**	**1.8E+01**	**Csoil**	**YES**	**CPAH**
	53-70-3	Dibenz(a,h)anthracene	ND	ND	MG/KG		0/16	0.0036 - 0.4	4.0E-01	N/A	1.5E-02 C	1.9E-01	Csoil	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	7.8E+00 N	4.7E+00	Csoil	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	4.9E+03 N	3.7E+01	Csoil	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	8.0E-02 J	2.4E-01 J	MG/KG	IR86-SS06-07D	2/16	0.27 - 0.4	2.4E-01	N/A	6.1E+02 N	1.9E+01	Csoil	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	N/A	3.8E+01	Csoil	NO	NTX
	206-44-0	Fluoranthene	9.7E-03 J	5.4E-01	MG/KG	IR86-SS104-0-0_5-09D	8/16	0.0036 - 0.4	5.4E-01	N/A	2.3E+02 N	3.3E+02	Csoil	NO	BSL
	86-73-7	Fluorene	6.0E-02	6.0E-02	MG/KG	IR86-SS104-0-0_5-09D	1/16	0.0036 - 0.4	6.0E-02	N/A	2.3E+02 N	5.6E+01	Csoil	NO	BSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	3.0E-01 C	2.6E-03	Csoil	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.1E+00 C**	8.7E-03	Csoil	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/15	0.28 - 0.4	4.0E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.4E-03 J**	**1.7E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/16**	**0.0036 - 0.4**	**1.7E-01**	**N/A**	**1.5E-01 C**	**2.0E+00**	**Csoil**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	MG/KG		0/16	0.2 - 0.4	4.0E-01	N/A	5.1E+02 C*	2.1E-01	Csoil	NO	DLBSL
	91-20-3	Naphthalene	1.2E-02	1.2E-02	MG/KG	IR86-SS104-0-0_5-09D	1/16	0.0036 - 0.4	1.2E-02	N/A	3.6E+00 C*	2.1E-01	Csoil	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/15	0.47 - 1	1.0E+00	N/A	8.9E-01 C	3.1E-02	Csoil	YES	DLASL

TABLE H 2.1
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	4.3E-03 J	3.6E-01	MG/KG	IR86-SS104-0-0_5-09D	7/16	0.0036 - 0.4	3.6E-01	N/A	1.7E+03 N	5.7E+01	Csoil	NO	BSL
	108-95-2	Phenol	ND	ND	MG/KG		0/16	0.27 - 0.4	4.0E-01	N/A	1.8E+03 N	2.3E-01	Csoil	NO	DLBSL
	129-00-0	Pyrene	1.7E-03 J	4.3E-01	MG/KG	IR86-SS104-0-0_5-09D	8/16	0.0036 - 0.4	4.3E-01	N/A	1.7E+02 N	2.2E+02	Csoil	NO	BSL
	72-54-8	4,4'-DDD	9.4E-04 J	1.4E-02 J	MG/KG	IR86-SS105-0-0_5-09D	6/16	0.0036 - 0.0041	1.4E-02	N/A	2.0E+00 C	2.4E-01	Csoil	NO	BSL
	72-55-9	4,4'-DDE	8.9E-04 J	1.8E-02 J	MG/KG	IR86-SS06-07D	13/16	0.0036 - 0.0041	1.8E-02	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	1.2E-03 J	9.0E-03	MG/KG	IR86-SS06-07D	9/16	0.0036 - 0.0041	9.0E-03	N/A	1.7E+00 C*	3.4E-01	Csoil	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/16	0.0018 - 0.0021	2.1E-03	N/A	2.9E-02 C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/16	0.0018 - 0.0021	2.1E-03	N/A	7.7E-02 C	1.2E-03	Csoil	NO	DLBSL
	5103-71-9	alpha-Chlordane	7.4E-04 J	3.0E-02	MG/KG	IR86-SS105-0-0_5-09D	7/16	0.0018 - 0.0021	3.0E-02	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/16	0.073 - 0.084	8.4E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/16	0.036 - 0.041	4.1E-02	N/A	2.2E-01 C	N/A	N/A	NO	BSL
	319-85-7	beta-BHC	2.8E-02	2.8E-02	MG/KG	IR86-SS105-0-0_5-09D	1/16	0.0018 - 0.0021	2.8E-02	N/A	2.7E-01 C	1.2E-03	Csoil	NO	BSL
	319-86-8	delta-BHC	4.3E-04 J	1.1E-03 J	MG/KG	IR86-SS02-07D	2/16	0.0018 - 0.0021	1.1E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	BSL
	60-57-1	Dieldrin	5.7E-04 J	5.7E-03 J	MG/KG	IR86-SS104-0-0_5-09D	5/16	0.0036 - 0.0041	5.7E-03	N/A	3.0E-02 C	8.1E-04	Csoil	NO	BSL
	959-98-8	Endosulfan I	3.4E-02 J	3.4E-02 J	MG/KG	IR86-SS105-0-0_5-09D	1/16	0.0018 - 0.0021	3.4E-02	N/A	3.7E+01 N	5.6E+00	Csoil	NO	BSL
	33213-65-9	Endosulfan II	8.4E-04 J	5.0E-03	MG/KG	IR86-SS01-07D	5/16	0.0036 - 0.0041	5.0E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	1031-07-8	Endosulfan sulfate	2.7E-03 J	2.7E-03 J	MG/KG	IR86-SS105-0-0_5-09D	1/16	0.0036 - 0.0041	2.7E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	72-20-8	Endrin	1.2E-03 J	1.2E-03 J	MG/KG	IR86-SS01-07D	1/16	0.0036 - 0.0041	1.2E-03	N/A	1.8E+00 N	8.1E-01	Csoil	NO	BSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/16	0.0036 - 0.0041	4.1E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	MG/KG		0/16	0.0036 - 0.0041	4.1E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	7.9E-04 J	7.9E-04 J	MG/KG	IR86-SS04-07D	1/16	0.0018 - 0.0021	7.9E-04	N/A	5.2E-01 C*	1.8E-03	Csoil	NO	BSL
	5103-74-2	gamma-Chlordane	4.5E-04 J	3.0E-02 J	MG/KG	IR86-SS105-0-0_5-09D	11/16	0.0018 - 0.0021	3.0E-02	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/16	0.0018 - 0.0021	2.1E-03	N/A	1.1E-01 C	6.6E-03	Csoil	NO	DLBSL
	1024-57-3	Heptachlor epoxide	2.4E-03	2.4E-03	MG/KG	IR86-SS105-0-0_5-09D	1/16	0.0018 - 0.0021	2.4E-03	N/A	5.3E-02 C*	8.2E-04	Csoil	NO	BSL
	72-43-5	Methoxychlor	9.5E-03 J	9.5E-03 J	MG/KG	IR86-SS106-0-0_5-09D	1/16	0.018 - 0.021	9.5E-03	N/A	3.1E+01 N	2.2E+01	Csoil	NO	BSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/16	0.033 - 0.2	2.0E-01	N/A	4.4E-01 C	4.6E-02	Csoil	NO	DLBSL
	7429-90-5	**Aluminum**	**1.1E+03**	**1.0E+04 J**	**MG/KG**	**IR86-SS106-0-0_5-09D**	**16/16**	**11 - 23.9**	**1.0E+04**	**5.5E+03**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	2.3E-01 J	3.0E-01 J	MG/KG	IR86-SS106-0-0_5-09D	3/16	0.55 - 7.2	3.0E-01	4.5E-01	3.1E+00 N	N/A	N/A	NO	BSL
	7440-38-2	**Arsenic**	**6.3E-01 J**	**3.2E+00**	**MG/KG**	**IR86-SS100-09D**	**14/16**	**0.55 - 1.2**	**3.2E+00**	**6.3E-01**	**3.9E-01 C***	**5.8E+00**	**Csoil**	**YES**	**ASL**
	7440-39-3	Barium	9.4E+00 J	2.7E+01	MG/KG	IR86-SS07-07D	16/16	1.4 - 23.9	2.7E+01	1.4E+01	1.5E+03 N	5.8E+02	Csoil	NO	BSL
	7440-41-7	Beryllium	8.1E-02 J	1.9E-01 J	MG/KG	IR86-SS100-09D	4/16	0.22 - 0.6	1.9E-01	1.0E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	4.8E-02 J	1.6E+00	MG/KG	IR86-SS04-07D	14/16	0.11 - 0.6	1.6E+00	2.3E-02	7.0E+00 N	3.0E+00	N/A	NO	BSL

TABLE H 2.1

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	6.8E+02	3.7E+04	MG/KG	IR86-SS109-09D	16/16	280 - 599	3.7E+04	6.4E+03	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.4E+00**	**2.3E+01**	**MG/KG**	**IR86-SS100-09D**	**16/16**	**0.28 - 1.2**	**2.3E+01**	**6.1E+00**	**2.9E-01 C**	**3.8E+00**	**Csoil**	**YES**	**ASL**
	7440-48-4	**Cobalt**	**9.0E-01 J**	**2.5E+00**	**MG/KG**	**IR86-SS100-09D**	**6/16**	**1.4 - 6**	**2.5E+00**	**2.9E-01**	**2.3E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.0E+00	8.3E+00 J	MG/KG	IR86-SS09-07D	16/16	0.28 - 3	8.3E+00	4.8E+00	3.1E+02 N	7.0E+02	Csoil	NO	BSL
	57-12-5	Cyanide	1.9E-01 J	5.0E-01 J	MG/KG	IR86-SS10-07D	8/10	2.7 - 3	5.0E-01	NA	1.6E+02 N	2.8E-01	Csoil	NO	BSL
	7439-89-6	Iron	5.0E+02 J	4.5E+03 J	MG/KG	IR86-SS105-0-0_5-09D	16/16	5.5 - 12	4.5E+03	3.2E+03	5.5E+03 N	1.5E+02	Csoil	NO	BSL
	7439-92-1	Lead	1.9E-01 J	1.0E+02 J	MG/KG	IR86-SS07-07D	16/16	0.55 - 1.2	1.0E+02	1.2E+01	4.0E+02 NL	2.7E+02	Csoil	NO	BSL
	7439-95-4	Magnesium	6.7E+01 J	1.3E+03	MG/KG	IR86-SS06-07D	16/16	280 - 599	1.3E+03	2.4E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.5E+00 J	4.3E+01 J	MG/KG	IR86-SS107-0-0_5-09D	16/16	0.83 - 1.8	4.3E+01	1.4E+01	1.8E+02 N	6.5E+01	Csoil	NO	BSL
	7439-97-6	Mercury	4.7E-02 J	7.6E-02 J	MG/KG	IR86-SS07-07D	4/16	0.091 - 0.12	7.6E-02	8.1E-02	2.3E+00 N	1.0E+00	Csoil	NO	BSL
	7440-02-0	Nickel	7.1E-01 J	7.3E+00 J	MG/KG	IR86-SS100-09D	16/16	2.2 - 4.8	7.3E+00	1.2E+00	1.5E+02 N	1.3E+02	Csoil	NO	BSL
	7440-09-7	Potassium	3.5E+01 J	9.0E+02	MG/KG	IR86-SS107-0-0_5-09D	16/16	280 - 599	9.0E+02	1.2E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.5E-01 J	1.1E+00	MG/KG	IR86-SS100-09D	8/16	0.55 - 4.2	1.1E+00	5.6E-01	3.9E+01 N	2.1E+00	Csoil	NO	BSL
	7440-22-4	Silver	2.7E-01 J	2.7E-01 J	MG/KG	IR86-SS109-09D	1/16	0.28 - 1.2	2.7E-01	1.4E-01	3.9E+01 N	3.4E+00	Csoil	NO	BSL
	7440-23-5	Sodium	6.0E+01 J	3.4E+02	MG/KG	IR86-SS107-0-0_5-09D	6/16	280 - 599	3.4E+02	8.1E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	3.5E-01 J	5.3E-01 J	MG/KG	IR86-SS100-09D	5/16	2.6 - 3.1	5.3E-01	3.6E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	4.7E+00 J	2.3E+01	MG/KG	IR86-SS07-07D	16/16	2.8 - 6	2.3E+01	8.9E+00	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	5.3E+00 J	6.8E+01	MG/KG	IR86-SS04-07D	16/16	2.8 - 7.2	6.8E+01	1.1E+01	2.3E+03 N	1.2E+03	Csoil	NO	BSL

TABLE H 2.1

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values are two times the arithmetic mean basewide background surface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action

RSL value for Manganese (water) used as surrogate for manganese.

RSL value for Mercury (inorganic salts) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for chromium VI used as surrogate for chromium.

RSL value for vanadium based on vanadium and compounds.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.
C = Carcinogenic
N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N = Noncarcinogenic

S = concentration exceeds Csat, used Csat as screening value

C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached

Csoil = Federal Re Csoil = Federal Remediation Branch Target Screening Values, calculated source concentraion for soil which is for soil which is protective of groundwater, January 2010

Created by: Debbie Stannard

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Emissions from Surface Soil in Industrial Area	71-55-6	1,1,1-Trichloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	1.0E-02	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	1.1E-03	N/A	4.2E-02 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	µg/m^3		0/16	N/A - N/A	1.4E-02	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	2.4E-03	N/A	1.5E-01 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	8.3E-03	N/A	1.5E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	5.8E-04	N/A	2.1E-01 N	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	µg/m^3		0/16	N/A - N/A	5.4E-04	N/A	1.6E-04 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	µg/m^3		0/16	N/A - N/A	2.0E-03	N/A	4.1E-03 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	3.8E-03	N/A	9.4E-02 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	µg/m^3		0/16	N/A - N/A	4.9E-03	N/A	2.4E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	1.7E-03	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	1.7E-03	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	µg/m^3		0/16	N/A - N/A	1.4E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	µg/m^3		0/16	N/A - N/A	1.3E-03	N/A	3.1E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	µg/m^3		0/16	N/A - N/A	1.6E-03	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	3.0E-04 J	3.0E-04 J	µg/m^3	IR86-SS100-09D	1/16	N/A - N/A	3.0E-04	N/A	3.2E+03 N	N/A	N/A	NO	BSL
	71-43-2	Benzene	ND	ND	µg/m^3		0/16	N/A - N/A	4.9E-03	N/A	3.1E-01 C	N/A	N/A	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	µg/m^3		0/16	N/A - N/A	4.3E-03	N/A	6.6E-02 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	µg/m^3		0/16	N/A - N/A	8.5E-04	N/A	2.2E+00 C	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	µg/m^3		0/16	N/A - N/A	1.2E-02	N/A	5.2E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-02	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	µg/m^3		0/16	N/A - N/A	1.1E-02	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	2.7E-03	N/A	5.2E+00 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	1.3E-02	N/A	1.0E+03 N	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	µg/m^3		0/16	N/A - N/A	6.6E-03	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	µg/m^3		0/16	N/A - N/A	1.4E-02	N/A	9.4E+00 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	µg/m^3		0/16	N/A - N/A	6.9E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	µg/m^3		0/16	N/A - N/A	5.1E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	µg/m^3		0/16	N/A - N/A	1.6E-02	N/A	6.3E+02 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	µg/m^3		0/16	N/A - N/A	8.4E-04	N/A	9.0E-02 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	µg/m^3		0/16	N/A - N/A	2.1E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-03	N/A	9.7E-01 C	N/A	N/A	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	µg/m^3		0/16	N/A - N/A	2.8E-03	N/A	4.2E+01 N	N/A	N/A	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	µg/m^3		0/16	N/A - N/A	2.1E-03	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	3.2E-03 J	3.2E-03 J	µg/m^3	IR86-SS107-0-0_5-09D	1/16	N/A - N/A	3.2E-03	N/A	7.3E+01 N	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	µg/m^3		0/16	N/A - N/A	7.8E-03	N/A	5.2E+00 C	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	µg/m^3		0/16	N/A - N/A	3.5E-03	N/A	9.4E+00 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	µg/m^3		0/16	N/A - N/A	1.8E-03	N/A	1.0E+02 N	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	µg/m^3		0/16	N/A - N/A	7.3E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	8.0E-04 J	1.0E-02	µg/m^3	IR86-SS107-0-0_5-09D	2/16	N/A - N/A	1.0E-02	N/A	5.2E+02 N	N/A	N/A	NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	µg/m^3		0/16	N/A - N/A	6.9E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	µg/m^3		0/16	N/A - N/A	5.1E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	µg/m^3		0/16	N/A - N/A	7.8E-03	N/A	1.2E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	µg/m^3		0/16	N/A - N/A	1.7E-02	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	µg/m^3		0/16	N/A - N/A	1.8E-02	N/A	1.6E-01 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-03	N/A	1.0E+01 N	N/A	N/A	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	µg/m^3		0/13	N/A - N/A	2.9E-03	N/A	N/A	N/A	N/A	NO	NTX
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	µg/m^3		0/16	N/A - N/A	9.3E-03	N/A	2.4E-01 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	µg/m^3		0/16	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	88-06-2	2,4,6-Trichlorophenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	7.8E-01 C	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-67-9	2,4-Dimethylphenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	51-28-5	2,4-Dinitrophenol	ND	ND	µg/m^3		0/15	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	121-14-2	2,4-Dinitrotoluene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	2.7E-02 C	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	91-58-7	2-Chloronaphthalene	ND	ND	µg/m^3		0/16	N/A - N/A	4.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-57-8	2-Chlorophenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-57-6	2-Methylnaphthalene	ND	ND	µg/m^3		0/16	N/A - N/A	5.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-48-7	2-Methylphenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	µg/m^3		0/16	N/A - N/A	7.4E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	7.2E-03 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	µg/m^3		0/16	N/A - N/A	7.4E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	µg/m^3		0/15	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	101-55-3	4-Bromophenyl-phenylether	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	µg/m^3		0/16	N/A - N/A	1.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	106-47-8	4-Chloroaniline	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	106-44-5	4-Methylphenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	µg/m^3		0/16	N/A - N/A	7.4E-07	N/A	6.3E-01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	µg/m^3		0/16	N/A - N/A	1.1E-02	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	4.6E-04	4.6E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/16	N/A - N/A	4.6E-04	N/A	N/A	N/A	N/A	NO	NTX
	208-96-8	Acenaphthylene	1.3E-05 J	1.3E-05 J	µg/m^3	IR86-SS104-0-0_5-09D	1/16	N/A - N/A	1.3E-05	N/A	N/A	N/A	N/A	NO	NTX
	98-86-2	Acetophenone	1.2E-03 J	1.2E-03 J	µg/m^3	IR86-SS02-07D	1/13	N/A - N/A	1.2E-03	N/A	N/A	N/A	N/A	NO	NTX
	120-12-7	Anthracene	1.4E-06 J	2.2E-04	µg/m^3	IR86-SS104-0-0_5-09D	4/16	N/A - N/A	2.2E-04	N/A	N/A	N/A	N/A	NO	NTX
	1912-24-9	Atrazine	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	100-52-7	Benzaldehyde	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-02	N/A	N/A	N/A	N/A	NO	NTX
	56-55-3	Benzo(a)anthracene	4.2E-09 J	2.0E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/16	N/A - N/A	2.0E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	50-32-8	Benzo(a)pyrene	4.2E-09 J	1.7E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/16	N/A - N/A	1.7E-07	N/A	8.7E-04 C	N/A	N/A	NO	BSL
	205-99-2	Benzo(b)fluoranthene	6.0E-09 J	2.2E-07	µg/m^3	IR86-SS104-0-0_5-09D	8/16	N/A - N/A	2.2E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	1.8E-06 J	6.6E-05	µg/m^3	IR86-SS104-0-0_5-09D	5/16	N/A - N/A	6.6E-05	N/A	N/A	N/A	N/A	NO	NTX
	207-08-9	Benzo(k)fluoranthene	1.9E-09 J	1.4E-07 J	µg/m^3	IR86-SS06-07D : IR86-SS07-07D	7/16	N/A - N/A	1.4E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	µg/m^3		0/16	N/A - N/A	7.8E-03	N/A	7.4E-03 C	N/A	N/A	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	6.1E-08 J	2.2E-07 J	µg/m^3	IR86-SS04-07D	4/16	N/A - N/A	2.2E-07	N/A	1.0E+00 C	N/A	N/A	NO	BSL
	85-68-7	Butylbenzylphthalate	7.3E-08 J	1.8E-07 J	µg/m^3	IR86-SS04-07D : IR86-SS06-07D	3/16	N/A - N/A	1.8E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-60-2	Caprolactam	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-74-8	Carbazole	1.4E-04 J	1.4E-04 J	µg/m^3	IR86-SS104-0-0_5-09D	1/16	N/A - N/A	1.4E-04	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	4.4E-09 J	2.0E-07 J	µg/m^3	IR86-SS07-07D	7/16	N/A - N/A	2.0E-07	N/A	8.7E-02 C	N/A	N/A	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	8.0E-04 C	N/A	N/A	NO	DLBSL
	132-64-9	Dibenzofuran	ND	ND	µg/m^3		0/16	N/A - N/A	3.9E-02	N/A	N/A	N/A	N/A	NO	NTX
	84-66-2	Diethylphthalate	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	131-11-3	Dimethyl phthalate	ND	ND	µg/m^3		0/16	N/A - N/A	1.8E-03	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	5.9E-08 J	1.8E-07 J	µg/m^3	IR86-SS06-07D	2/16	N/A - N/A	1.8E-07	N/A	N/A	N/A	N/A	NO	NTX
	117-84-0	Di-n-octylphthalate	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	7.1E-09 J	4.1E-07	µg/m^3	IR86-SS104-0-0_5-09D	8/16	N/A - N/A	4.1E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	1.7E-04	1.7E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/16	N/A - N/A	1.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	118-74-1	Hexachlorobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	5.3E-03 C	N/A	N/A	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	µg/m^3		0/15	N/A - N/A	2.9E-07	N/A	2.1E-02 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	3.2E-09 J	1.3E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/16	N/A - N/A	1.3E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	78-59-1	Isophorone	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	2.1E+02 N	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	2.1E-04	2.1E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/16	N/A - N/A	2.1E-04	N/A	7.2E-02 C*	N/A	N/A	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	1.2E-03 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	9.4E-01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	µg/m^3		0/15	N/A - N/A	7.4E-07	N/A	4.8E-01 C	N/A	N/A	NO	DLBSL

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	6.8E-06 J	5.7E-04	µg/m^3	IR86-SS104-0-0_5-09D	7/16	N/A - N/A	5.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	108-95-2	Phenol	ND	ND	µg/m^3		0/16	N/A - N/A	2.9E-07	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	5.9E-07 J	1.5E-04	µg/m^3	IR86-SS104-0-0_5-09D	8/16	N/A - N/A	1.5E-04	N/A	N/A	N/A	N/A	NO	NTX
	72-54-8	4,4'-DDD	6.9E-10 J	1.1E-08 J	µg/m^3	IR86-SS105-0-0_5-09D	6/16	N/A - N/A	1.1E-08	N/A	3.5E-02 C	N/A	N/A	NO	BSL
	72-55-9	4,4'-DDE	6.5E-10 J	1.4E-08 J	µg/m^3	IR86-SS06-07D	13/16	N/A - N/A	1.4E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	8.8E-10 J	6.8E-09	µg/m^3	IR86-SS06-07D	9/16	N/A - N/A	6.8E-09	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	309-00-2	Aldrin	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-09	N/A	5.0E-04 C	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-09	N/A	1.4E-03 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	5.4E-10 J	2.3E-08	µg/m^3	IR86-SS105-0-0_5-09D	7/16	N/A - N/A	2.3E-08	N/A	2.4E-02 C*	N/A	N/A	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-08	N/A	1.2E-01 C	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	µg/m^3		0/16	N/A - N/A	8.1E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	µg/m^3		0/16	N/A - N/A	4.0E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	2.1E-08	2.1E-08	µg/m^3	IR86-SS105-0-0_5-09D	1/16	N/A - N/A	2.1E-08	N/A	4.6E-03 C	N/A	N/A	NO	BSL
	319-86-8	delta-BHC	3.2E-10 J	8.1E-10 J	µg/m^3	IR86-SS02-07D	2/16	N/A - N/A	8.1E-10	N/A	4.8E-03 C	N/A	N/A	NO	BSL
	60-57-1	Dieldrin	4.2E-10 J	4.2E-09 J	µg/m^3	IR86-SS104-0-0_5-09D	5/16	N/A - N/A	4.2E-09	N/A	5.3E-04 C	N/A	N/A	NO	BSL
	959-98-8	Endosulfan I	2.5E-08 J	2.5E-08 J	µg/m^3	IR86-SS105-0-0_5-09D	1/16	N/A - N/A	2.5E-08	N/A	N/A	N/A	N/A	NO	NTX
	33213-65-9	Endosulfan II	6.2E-10 J	3.7E-09	µg/m^3	IR86-SS01-07D	5/16	N/A - N/A	3.7E-09	N/A	N/A	N/A	N/A	NO	NTX
	1031-07-8	Endosulfan sulfate	2.0E-09 J	2.0E-09 J	µg/m^3	IR86-SS105-0-0_5-09D	1/16	N/A - N/A	2.0E-09	N/A	N/A	N/A	N/A	NO	NTX
	72-20-8	Endrin	8.8E-10 J	8.8E-10 J	µg/m^3	IR86-SS01-07D	1/16	N/A - N/A	8.8E-10	N/A	N/A	N/A	N/A	NO	NTX
	7421-93-4	Endrin aldehyde	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-09	N/A	N/A	N/A	N/A	NO	NTX
	53494-70-5	Endrin ketone	ND	ND	µg/m^3		0/16	N/A - N/A	3.0E-09	N/A	N/A	N/A	N/A	NO	NTX
	58-89-9	gamma-BHC (Lindane)	5.8E-10 J	5.8E-10 J	µg/m^3	IR86-SS04-07D	1/16	N/A - N/A	5.8E-10	N/A	7.8E-03 C	N/A	N/A	NO	BSL
	5103-74-2	gamma-Chlordane	3.3E-10 J	2.2E-08 J	µg/m^3	IR86-SS105-0-0_5-09D	11/16	N/A - N/A	2.2E-08	N/A	2.4E-02 C	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-09	N/A	1.9E-03 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	1.8E-09	1.8E-09	µg/m^3	IR86-SS105-0-0_5-09D	1/16	N/A - N/A	1.8E-09	N/A	9.4E-04 C	N/A	N/A	NO	BSL
	72-43-5	Methoxychlor	7.0E-09 J	7.0E-09 J	µg/m^3	IR86-SS106-0-0_5-09D	1/16	N/A - N/A	7.0E-09	N/A	N/A	N/A	N/A	NO	NTX
	8001-35-2	Toxaphene	ND	ND	µg/m^3		0/16	N/A - N/A	1.5E-07	N/A	7.6E-03 C	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	8.3E-04	7.4E-03 J	µg/m^3	IR86-SS106-0-0_5-09D	16/16	N/A - N/A	7.4E-03	N/A	5.2E-01 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	1.7E-07 J	2.2E-07 J	µg/m^3	IR86-SS106-0-0_5-09D	3/16	N/A - N/A	2.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-38-2	Arsenic	4.6E-07 J	2.4E-06	µg/m^3	IR86-SS100-09D	14/16	N/A - N/A	2.4E-06	N/A	5.7E-04 C*	N/A	N/A	NO	BSL
	7440-39-3	Barium	6.9E-06 J	2.0E-05	µg/m^3	IR86-SS07-07D	16/16	N/A - N/A	2.0E-05	N/A	5.2E-02 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	6.0E-08 J	1.4E-07 J	µg/m^3	IR86-SS100-09D	4/16	N/A - N/A	1.4E-07	N/A	1.0E-03 C*	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	3.5E-08 J	1.2E-06	µg/m^3	IR86-SS04-07D	14/16	N/A - N/A	1.2E-06	N/A	1.0E-03 C**	N/A	N/A	NO	BSL

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	5.0E-04	2.7E-02	µg/m^3	IR86-SS109-09D	16/16	N/A - N/A	2.7E-02	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.0E-06**	**1.7E-05**	**µg/m^3**	**IR86-SS100-09D**	**16/16**	**N/A - N/A**	**1.7E-05**	**N/A**	**1.1E-05 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	Cobalt	6.6E-07 J	1.8E-06	µg/m^3	IR86-SS100-09D	6/16	N/A - N/A	1.8E-06	N/A	2.7E-04 C*	N/A	N/A	NO	BSL
	7440-50-8	Copper	7.4E-07	6.1E-06 J	µg/m^3	IR86-SS09-07D	16/16	N/A - N/A	6.1E-06	N/A	N/A	N/A	N/A	NO	NTX
	57-12-5	Cyanide	1.4E-07 J	3.7E-07 J	µg/m^3	IR86-SS10-07D	8/10	N/A - N/A	3.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	7439-89-6	Iron	3.7E-04 J	3.3E-03 J	µg/m^3	IR86-SS105-0-0_5-09D	16/16	N/A - N/A	3.3E-03	N/A	N/A	N/A	N/A	NO	NTX
	7439-92-1	Lead	1.4E-07 J	7.3E-05 J	µg/m^3	IR86-SS07-07D	16/16	N/A - N/A	7.3E-05	N/A	N/A	N/A	N/A	NO	NTX
	7439-95-4	Magnesium	5.0E-05 J	9.4E-04	µg/m^3	IR86-SS06-07D	16/16	N/A - N/A	9.4E-04	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.1E-06 J	3.2E-05 J	µg/m^3	IR86-SS107-0-0_5-09D	16/16	N/A - N/A	3.2E-05	N/A	5.2E-03 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	3.5E-08 J	5.6E-08 J	µg/m^3	IR86-SS07-07D	4/16	N/A - N/A	5.6E-08	N/A	3.1E-02 N	N/A	N/A	NO	BSL
	7440-02-0	Nickel	5.2E-07 J	5.4E-06 J	µg/m^3	IR86-SS100-09D	16/16	N/A - N/A	5.4E-06	N/A	9.4E-03 C*	N/A	N/A	NO	BSL
	7440-09-7	Potassium	2.6E-05 J	6.6E-04	µg/m^3	IR86-SS107-0-0_5-09D	16/16	N/A - N/A	6.6E-04	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.8E-07 J	8.1E-07	µg/m^3	IR86-SS100-09D	8/16	N/A - N/A	8.1E-07	N/A	2.1E+00 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	2.0E-07 J	2.0E-07 J	µg/m^3	IR86-SS109-09D	1/16	N/A - N/A	2.0E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-23-5	Sodium	4.4E-05 J	2.5E-04	µg/m^3	IR86-SS107-0-0_5-09D	6/16	N/A - N/A	2.5E-04	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	2.6E-07 J	3.9E-07 J	µg/m^3	IR86-SS100-09D	5/16	N/A - N/A	3.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	3.5E-06 J	1.7E-05	µg/m^3	IR86-SS07-07D	16/16	N/A - N/A	1.7E-05	N/A	N/A	N/A	N/A	NO	NTX
	7440-66-6	Zinc	3.9E-06 J	5.0E-05	µg/m^3	IR86-SS04-07D	16/16	N/A - N/A	5.0E-05	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.2

Occuurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum calculated air concentrations from surface soil concentrations. Air concentrations calculated as $C_{air} = C_{soil}*1000*(1/PEF + 1/VF)$.
PEF = 1.36E+09 m^3/kg. VF calculated for volatile constituents only, on Table 2.2A and 2.4A. PEF and VF from USEPA's Soil Screening Guidance. (USEPA, July 1996)

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online].
Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for trans-1,2-dichloroethene used as a surrogate for cis-1,2-dichloroethene.
RSL value for chromium VI used as surrogate for chromium.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

[5] RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/
To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore
N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore
N screening value/10 used as screening level
N = Noncarcinogenic

Created by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/

TABLE H 2.2A and H 2.4A
Calculation of Volatilization Factor
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Diffusivity in Air (D_i) (cm^2/s)	Henry's Law Constant (H') (unitless)	Diffusivity in Water (D_w) (cm^2/s)	Soil Organic Carbon Partition Coeff. (K_{oc}) (L/kg)	Soil Water Partition Coeff. ($K_d = K_{oc} \times F_{oc}$) ($g/cm^3$)	Solubility in Water (S) (mg/L)	Apparent Diffusivity (D_A) (cm^2/s)	Volatilization Factor (VF) (m^3/kg)	Soil Saturation Concentration (C_{sat}) (mg/kg)
1,1,1-Trichloroethane	6.50E-02	7.00E-01	9.60E-06	4.39E+01	2.63E-01	1.29E+03	4.89E-03	2.01E+03	6.40E+02
1,1,2,2-Tetrachloroethane	4.90E-02	1.50E-02	9.30E-06	9.49E+01	5.69E-01	2.83E+03	5.83E-05	1.84E+04	1.90E+03
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	3.80E-02	2.20E+01	8.60E-06	1.97E+02	1.18E+00	1.70E+02	8.18E-03	1.56E+03	9.26E+02
1,1,2-Trichloroethane	6.70E-02	3.40E-02	1.00E-05	6.07E+01	3.64E-01	4.59E+03	2.58E-04	8.76E+03	2.16E+03
1,1-Dichloroethane	8.40E-02	2.30E-01	1.10E-05	3.18E+01	1.91E-01	5.04E+03	3.08E-03	2.53E+03	1.69E+03
1,1-Dichloroethene	8.60E-02	1.10E+00	1.10E-05	3.18E+01	1.91E-01	2.42E+03	1.01E-02	1.40E+03	1.21E+03
1,2,4-Trichlorobenzene	4.00E-02	5.80E-02	8.40E-06	1.36E+03	8.16E+00	4.90E+01	1.50E-05	3.64E+04	4.05E+02
1,2-Dibromo-3-chloropropane	3.20E-02	6.00E-03	8.90E-06	1.16E+02	6.96E-01	1.23E+03	1.29E-05	3.92E+04	9.80E+02
1,2-Dibromoethane	4.30E-02	2.70E-02	1.00E-05	3.96E+01	2.38E-01	3.91E+03	1.81E-04	1.05E+04	1.34E+03
1,2-Dichlorobenzene	5.60E-02	7.80E-02	8.90E-06	3.83E+02	2.30E+00	1.56E+02	9.65E-05	1.43E+04	3.76E+02
1,2-Dichloroethane	8.60E-02	4.80E-02	1.10E-05	3.96E+01	2.38E-01	8.60E+03	6.35E-04	5.58E+03	2.98E+03
1,2-Dichloropropane	8.10E-02	1.20E-01	9.50E-06	6.07E+01	3.64E-01	2.80E+03	1.06E-03	4.31E+03	1.36E+03
1,3-Dichlorobenzene	5.50E-02	9.90E-02	8.70E-06	3.75E+02	2.25E+00	8.13E+01	1.22E-04	1.27E+04	1.93E+02
1,4-Dichlorobenzene	5.50E-02	9.90E-02	8.70E-06	3.75E+02	2.25E+00	8.13E+01	1.22E-04	1.27E+04	1.93E+02
2-Butanone	9.10E-02	2.30E-03	1.00E-05	4.51E+00	2.71E-02	2.23E+05	8.80E-05	1.50E+04	2.84E+04
2-Hexanone	7.00E-02	3.80E-03	8.40E-06	1.50E+01	9.00E-02	1.72E+04	7.46E-05	1.63E+04	3.28E+03
4-Methyl-2-pentanone	7.00E-02	5.60E-03	8.30E-06	1.26E+01	7.56E-02	1.90E+04	1.19E-04	1.29E+04	3.36E+03
Acetone	1.10E-01	1.40E-03	1.10E-05	2.36E+00	1.42E-02	1.00E+06	7.23E-05	1.65E+04	1.14E+05
Benzene	9.00E-02	2.30E-01	1.00E-05	1.46E+02	8.76E-01	1.79E+03	1.08E-03	4.28E+03	1.82E+03
Bromodichloromethane	5.60E-02	8.70E-02	1.10E-05	3.18E+01	1.91E-01	3.03E+03	8.45E-04	4.84E+03	9.31E+02
Bromoform*	1.49E-02	2.56E-02	1.03E-05	8.71E+01	5.23E-01	3.20E+03	3.25E-05	2.47E+04	2.01E+03
Bromomethane	1.00E-01	3.00E-01	1.30E-05	1.32E+01	7.92E-02	1.52E+04	6.77E-03	1.71E+03	3.59E+03
Carbon Disulfide	1.10E-01	5.90E-01	1.30E-05	2.17E+01	1.30E-01	2.16E+03	1.01E-02	1.40E+03	7.38E+02
Carbon Tetrachloride	5.70E-02	1.10E+00	9.80E-06	4.39E+01	2.63E-01	7.93E+02	5.84E-03	1.84E+03	4.53E+02
Chlorobenzene	7.20E-02	1.30E-01	9.50E-06	2.34E+02	1.40E+00	4.98E+02	3.26E-04	7.79E+03	7.61E+02
Chloroethane	1.00E-01	4.50E-01	1.20E-05	2.17E+01	1.30E-01	6.71E+03	7.60E-03	1.61E+03	2.12E+03
Chloroform	7.70E-02	1.50E-01	1.10E-05	3.18E+01	1.91E-01	7.95E+03	1.93E-03	3.20E+03	2.54E+03
Chloromethane	1.20E-01	3.60E-01	1.40E-05	1.32E+01	7.92E-02	5.32E+03	9.31E-03	1.46E+03	1.32E+03
cis-1,2-Dichloroethene	8.80E-02	1.70E-01	1.10E-05	3.96E+01	2.38E-01	6.41E+03	2.16E-03	3.03E+03	2.37E+03
cis-1,3-Dichloropropene	8.20E-02	1.50E-01	9.60E-06	7.22E+01	4.33E-01	2.80E+03	1.17E-03	4.12E+03	1.57E+03
Cyclohexane	8.00E-02	6.10E+00	9.10E-06	1.46E+02	8.76E-01	5.50E+01	1.22E-02	1.27E+03	1.17E+02
Dibromochloromethane	3.70E-02	3.20E-02	1.10E-05	3.18E+02	1.91E+00	2.70E+03	3.14E-05	2.51E+04	5.44E+03
Dichlorodifluoromethane (Freon-12)	7.80E-02	1.40E+01	9.10E-06	4.39E+01	2.63E-01	2.80E+02	1.93E-02	1.01E+03	8.44E+02
Ethylbenzene	6.80E-02	3.20E-01	8.50E-06	4.46E+02	2.68E+00	1.69E+02	4.09E-04	6.96E+03	4.79E+02
Isopropylbenzene	6.00E-02	4.70E-01	7.90E-06	6.98E+02	4.19E+00	6.13E+01	3.43E-04	7.59E+03	2.68E+02
Methyl Acetate	9.60E-02	4.70E-03	1.10E-05	3.06E+00	1.84E-02	2.43E+05	2.02E-04	9.89E+03	2.90E+04
Methylcyclohexane*	6.97E-02	1.59E+01	7.59E-06	2.13E+03	1.28E+01	1.04E+01	3.72E-03	2.31E+03	1.65E+02
Methylene chloride	1.00E-01	1.30E-01	1.30E-05	2.17E+01	1.30E-01	1.30E+04	2.72E-03	2.70E+03	3.31E+03
Methyl-tert-butyl Ether (MTBE)	7.50E-02	2.40E-02	8.60E-06	1.16E+01	6.96E-02	5.10E+04	5.51E-04	5.99E+03	8.88E+03
Styrene	7.10E-02	1.10E-01	8.80E-06	4.46E+02	2.68E+00	3.10E+02	1.49E-04	1.15E+04	8.67E+02
Tetrachloroethene	5.00E-02	7.20E-01	9.50E-06	9.49E+01	5.69E-01	2.06E+02	2.38E-03	2.88E+03	1.66E+02
Toluene	7.80E-02	2.70E-01	9.20E-06	2.34E+02	1.40E+00	5.26E+02	7.22E-04	5.24E+03	8.18E+02
trans-1,2-Dichloroethene	8.80E-02	1.70E-01	1.10E-05	3.96E+01	2.38E-01	4.52E+03	2.16E-03	3.03E+03	1.67E+03
trans-1,3-Dichloropropene	8.20E-02	1.50E-01	9.60E-06	7.22E+01	4.33E-01	2.80E+03	1.17E-03	4.12E+03	1.57E+03
Trichloroethene	6.90E-02	4.00E-01	1.00E-05	6.07E+01	3.64E-01	1.28E+03	2.72E-03	2.70E+03	6.91E+02
Trichlorofluoromethane (Freon-11)	6.50E-02	4.00E+00	1.00E-05	4.39E+01	2.63E-01	1.10E+03	1.24E-02	1.27E+03	1.23E+03
Vinyl Chloride	1.10E-01	1.10E+00	1.20E-05	2.17E+01	1.30E-01	8.80E+03	1.47E-02	1.16E+03	3.86E+03
Xylene, Total	8.50E-02	2.10E-01	9.90E-06	3.83E+02	2.30E+00	1.06E+02	3.90E-04	7.12E+03	2.58E+02
1,1-Biphenyl	4.70E-02	1.30E-02	7.60E-06	5.13E+03	3.08E+01	6.94E+00	1.06E-06	1.37E+05	2.14E+02
2,2'-Oxybis(1-chloropropane)	4.00E-02	3.00E-03	7.40E-06	8.29E+01	4.97E-01	1.70E+03	1.08E-05	4.29E+04	1.02E+03
2-Chloronaphthalene	4.50E-02	1.30E-02	7.70E-06	2.48E+03	1.49E+01	1.17E+01	2.08E-06	9.74E+04	1.75E+02
2-Chlorophenol	6.60E-02	4.60E-04	9.50E-06	3.07E+02	1.84E+00	1.13E+04	8.64E-07	1.51E+05	2.19E+04

TABLE H 2.2A and H 2.4A
Calculation of Volatilization Factor
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Diffusivity in Air (D_i) (cm^2/s)	Henry's Law Constant (H') (unitless)	Diffusivity in Water (D_w) (cm^2/s)	Soil Organic Carbon Partition Coeff. (K_{oc}) (L/kg)	Soil Water Partition Coeff. ($K_d = K_{oc} \times F_{oc}$) ($g/cm^3$)	Solubility in Water (S) (mg/L)	Apparent Diffusivity (D_A) (cm^2/s)	Volatilization Factor (VF) (m^3/kg)	Soil Saturation Concentration (C_{sat}) (mg/kg)
2-Methylnaphthalene	5.20E-02	2.10E-02	7.80E-06	2.48E+03	1.49E+01	2.46E+01	3.89E-06	7.14E+04	3.69E+02
2-Nitrophenol	6.60E-02	4.60E-04	9.50E-06	3.07E+02	1.84E+00	1.13E+04	8.64E-07	1.51E+05	2.19E+04
4-Chloro-3-methylphenol	7.00E-02	1.00E-04	8.10E-06	4.92E+02	2.95E+00	3.83E+03	1.39E-07	3.77E+05	1.17E+04
4-Nitrophenol	6.80E-02	9.80E-04	9.40E-06	2.26E+02	1.36E+00	2.09E+03	2.48E-06	8.93E+04	3.04E+03
Acenaphthene	5.10E-02	7.50E-03	8.30E-06	5.03E+03	3.02E+01	3.90E+00	6.75E-07	1.71E+05	1.18E+02
Acenaphthylene	5.10E-02	7.50E-03	8.30E-06	5.03E+03	3.02E+01	3.90E+00	6.75E-07	1.71E+05	1.18E+02
Acetophenone	6.50E-02	4.30E-04	8.70E-06	5.19E+01	3.11E-01	6.13E+03	3.75E-06	7.26E+04	2.52E+03
Anthracene	3.90E-02	2.30E-03	7.90E-06	1.64E+04	9.84E+01	4.34E-02	4.90E-08	6.35E+05	4.27E+00
Benzaldehyde	7.40E-02	1.10E-03	9.50E-06	1.11E+01	6.66E-02	6.95E+03	2.64E-05	2.74E+04	1.16E+03
Benzo(g,h,i)perylene	2.80E-02	4.90E-04	7.20E-06	5.43E+04	3.26E+02	1.35E-01	2.38E-09	2.88E+06	4.40E+01
bis(2-Chloroethyl)ether	5.70E-02	7.00E-04	8.70E-06	3.22E+01	1.93E-01	1.72E+04	7.44E-06	5.16E+04	5.05E+03
Carbazole*	3.90E-02	3.38E-03	7.03E-06	2.45E+03	1.47E+01	7.21E-01	4.76E-07	2.04E+05	1.07E+01
Dibenzofuran	4.10E-02	8.70E-03	7.40E-06	9.16E-03	5.50E-05	3.10E+00	1.87E-04	1.03E+04	3.15E-01
Dimethyl phthalate*	5.68E-02	2.40E-05	6.30E-06	3.16E+01	1.90E-01	4.19E+03	3.89E-07	2.26E+05	1.21E+03
Fluorene	4.40E-02	3.90E-03	7.90E-06	9.16E+03	5.50E+01	1.69E+00	1.67E-07	3.44E+05	9.31E+01
Naphthalene	6.00E-02	1.80E-02	8.40E-06	1.54E+03	9.24E+00	3.10E+01	6.16E-06	5.67E+04	2.90E+02
Nitrobenzene	6.80E-02	9.80E-04	9.40E-06	2.26E+02	1.36E+00	2.09E+03	2.48E-06	8.93E+04	3.04E+03
Phenanthrene	3.90E-02	2.30E-03	7.90E-06	1.64E+04	9.84E+01	4.34E-02	4.90E-08	6.35E+05	4.27E+00
Pyrene	2.80E-02	4.90E-04	7.20E-06	5.43E+04	3.26E+02	1.35E-01	2.38E-09	2.88E+06	4.40E+01
Aroclor-1221	5.80E-02	3.00E-02	6.70E-06	8.40E+03	5.04E+01	1.50E+01	1.84E-06	1.04E+05	7.57E+02
Aroclor-1232	5.80E-02	3.00E-02	6.70E-06	8.40E+03	5.04E+01	1.45E+00	1.84E-06	1.04E+05	7.32E+01

Volatilization factor (VF) = (m^3/kg)

$$\frac{Q/C * (3.14 * D_A * T)^{1/2} * 10^{-4}\ m^2/cm^2}{2 * r_b * D_A}$$

Apparent Diffusivity (D_A) = (cm^2/s)

$$\frac{[(Q_a^{10/3} * D_i * H' + Q_w^{10/3} * D_w)/n^2]}{(r_b * K_d + Q_w + Q_a * H')}$$

Soil Saturation Concentration (C_{sat}) =

$$S/r_b * (K_d * r_b + Q_w + H' * Q_a)$$

Parameters	Values
Q/C - Inverse of the mean concentration at the center of a 0.5-acre-square source located in Raleigh-Durham, NC (g/m^2-s per kg/m^3)	77.26
T - Exposure interval(s)	9.5E+08
ρ_b - Soil bulk density (g/cm^3)	1.5
Θ_a - Air-filled soil porosity (L_{air}/L_{water}) = n - Θ_w	0.28
n - Total soil porosity (Lpore/Lsoil) = 1 - (ρ_b/ρ_s)	0.43
Θ_w - Water-filled soil porosity (Lwater/Lsoil)	0.15
ρ_s - Soil particle density (g/cm^3)	2.65
f_{oc} - fraction organic carbon in soil (g/g)	0.006

Equations from USEPA, 1996. *Soil Screening Guidance: User's Guide.* EPA/540/R-96/018.

Physical/chemical properties from Oak Ridge National Laboratory (ORNL). Dec 2009. Regional Screening Levels for Chemical Contaminants at Superfund Sites.

* Physical/chemical properties from Commission on Environmental Quality (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html), Risk Assessment Information System (http://rais.ornl.gov/)

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Soil in Flight Line Area	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.4E+02 NS	1.2E+00	Csoil	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.6E-01 C	1.2E-03	Csoil	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	9.1E+02 NS	9.2E+03	Csoil	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	3.3E+00 C	3.0E-02	Csoil	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.4E+01 N	4.6E-02	Csoil	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.2E+00 C**	2.2E+00	Csoil	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.4E-03 C	2.5E-04	Csoil	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	3.4E-02 C	9.7E-05	Csoil	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.9E+02 NS	2.4E-01	Csoil	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	4.3E-01 C	2.0E-03	Csoil	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	8.9E-01 C*	3.3E-03	Csoil	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.4E+00 C	7.6E+00	Csoil	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.4E+00 C	7.0E-02	Csoil	NO	DLBSL
	78-93-3	2-Butanone	1.5E-02 J	2.0E-02 J	MG/KG	IR86-SS111-0-0_5-09D	2/7	0.0099 - 0.018	2.0E-02	N/A	2.8E+03 N	1.6E+01	Csoil	NO	BSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/7	0.0099 - 0.018	1.8E-02	N/A	2.1E+01 N	1.2E+00	Csoil	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/7	0.0099 - 0.018	1.8E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	6.7E-03 J	2.3E-01 J	MG/KG	IR86-SS113-0-0_5-09D	5/7	0.02 - 0.036	2.3E-01	N/A	6.1E+03 N	2.4E+01	Csoil	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.1E+00 C*	7.3E-03	Csoil	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.7E-01 C	2.9E-03	Csoil	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/7	0.0099 - 0.018	1.8E-02	N/A	6.1E+01 C*	1.9E-02	Csoil	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/7	0.0099 - 0.018	1.8E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	8.2E+01 NS	3.8E+00	Csoil	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.1E-01 C	2.0E-03	Csoil	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.9E+01 N	4.5E-01	Csoil	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.5E+03 NS	1.6E+01	Csoil	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.9E-01 C	3.4E-01	Csoil	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.2E+01 N	1.5E-02	Csoil	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.6E+01 N	3.6E-01	Csoil	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.8E-01 C	1.9E-03	Csoil	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.8E+01 N	2.9E+01	Csoil	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.4E+00 C	8.1E+00	Csoil	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.1E+02 NS	1.3E+00	Csoil	NO	BSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.7E+01 NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	1.2E-02	1.2E-02	MG/KG	IR86-SS114-0-0_5-09D	1/7	0.0049 - 0.0091	1.2E-02	N/A	1.1E+01 C	2.3E-02	Csoil	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	4.3E+01 C	8.5E-02	Csoil	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.3E+02 NS	9.2E-01	Csoil	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.5E-01 C	5.0E-03	Csoil	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	5.0E+02 NS	5.5E+00	Csoil	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.5E+01 N	5.1E-01	Csoil	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	2.8E+00 C	1.8E-02	Csoil	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	7.9E+01 N	2.4E+01	Csoil	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.0E-02 C	1.9E-04	Csoil	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/7	0.0049 - 0.0091	9.1E-03	N/A	6.3E+01 NS	6.0E+00	Csoil	NO	BSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	2.1E+02 NS	4.3E+01	Csoil	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	4.6E+00 C	1.3E-03	Csoil	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.2E+02 N	1.4E+00	Csoil	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/7	0.38 - 0.48	4.8E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.9E+01 N	4.1E-03	Csoil	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.1E+01 N	1.6E+00	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/7	0.45 - 0.57	5.7E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/7	0.077 - 0.098	9.8E-02	N/A	3.1E+01 N	4.0E-01	Csoil	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/7	0.35 - 0.44	4.4E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	3.4E+02 N	8.4E+00	Csoil	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	3.4E+02 N	1.1E+01	Csoil	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	1.0E-03 J	4.4E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	4/7	0.0038 - 0.0048	4.4E-02	N/A	1.7E+03 N	6.6E+02	Csoil	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	2.1E+00 C	2.5E-02	Csoil	NO	DLBSL
	100-52-7	Benzaldehyde	3.0E-02 J	3.0E-02 J	MG/KG	IR86-SS113-0-0_5-09D	1/7	0.29 - 0.37	3.0E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	56-55-3	**Benzo(a)anthracene**	1.8E-03 J	2.4E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	2.4E-01	**N/A**	**1.5E-01 C**	**1.8E-01**	**Csoil**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	3.5E-03 J	2.9E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	2.9E-01	**N/A**	**1.5E-02 C**	**5.9E-02**	**Csoil**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	4.6E-03 J	3.6E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	3.6E-01	**N/A**	**1.5E-01 C**	**6.0E-01**	**Csoil**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	1.4E-03 J	2.3E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	6/7	0.0038 - 0.0048	2.3E-01	N/A	1.7E+02 N	3.6E+02	Csoil	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	2.3E-03 J	2.8E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	2.8E-01	**N/A**	**1.5E+00 C**	**5.9E+00**	**Csoil**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	2.1E-01 C	1.4E-04	Csoil	NO	DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.4E-01 J	1.4E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	1/7	0.29 - 0.37	1.4E-01	N/A	3.5E+01 C*	7.2E+00	Csoil	NO	BSL
	85-68-7	Butylbenzylphthalate	6.0E-02 J	6.0E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	1/7	0.29 - 0.37	6.0E-02	N/A	2.6E+02 C*	1.5E+02	Csoil	NO	BSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.1E+03 N	1.8E+01	Csoil	NO	DLBSL
	86-74-8	Carbazole	4.6E-02 J	4.6E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	1/7	0.29 - 0.37	4.6E-02	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	3.3E-03 J	2.9E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	6/7	0.0038 - 0.022	2.9E-01	**N/A**	**1.5E+01 C**	**1.8E+01**	**Csoil**	**YES**	**CPAH**
	53-70-3	**Dibenz(a,h)anthracene**	8.3E-03	8.3E-03	MG/KG	IR86-SS108-0-0_5-09D	1/7	0.0038 - 0.0048	8.3E-03	**N/A**	**1.5E-02 C**	**1.9E-01**	**Csoil**	**YES**	**CPAH**
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	7.8E+00 N	4.7E+00	Csoil	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	4.9E+03 N	3.7E+01	Csoil	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	3.0E-02 J	3.0E-02 J	MG/KG	IR86-SS113-0-0_5-09D	1/7	0.29 - 0.37	3.0E-02	N/A	6.1E+02 N	1.9E+01	Csoil	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	N/A	3.8E+01	Csoil	NO	NTX
	206-44-0	Fluoranthene	4.5E-03	4.3E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	4.3E-01	N/A	2.3E+02 N	3.3E+02	Csoil	NO	BSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	2.3E+02 N	5.6E+01	Csoil	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.0E-01 C	2.6E-03	Csoil	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+00 C**	8.7E-03	Csoil	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	2.0E-03 J	2.2E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	6/7	0.0038 - 0.022	2.2E-01	**N/A**	**1.5E-01 C**	**2.0E+00**	**Csoil**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	MG/KG		0/7	0.21 - 0.26	2.6E-01	N/A	5.1E+02 C*	2.1E-01	Csoil	NO	DLBSL
	91-20-3	Naphthalene	1.7E-03 J	1.7E-03 J	MG/KG	IR86-SS114D-0-0_5-09D	1/7	0.0038 - 0.0048	1.7E-03	N/A	3.6E+00 C*	2.1E-01	Csoil	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/7	0.48 - 0.62	6.2E-01	N/A	8.9E-01 C	3.1E-02	Csoil	NO	DLBSL

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	2.7E-03 J	1.1E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	6/7	0.0038 - 0.0048	1.1E-01	N/A	1.7E+03 N	5.7E+01	Csoil	NO	BSL
	108-95-2	Phenol	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	N/A	1.8E+03 N	2.3E-01	Csoil	NO	DLBSL
	129-00-0	Pyrene	3.8E-03	3.7E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.0038 - 0.022	3.7E-01	N/A	1.7E+02 N	2.2E+02	Csoil	NO	BSL
	72-54-8	4,4'-DDD	7.1E-04 J	3.9E-03 J	MG/KG	IR86-SS113-0-0_5-09D	3/7	0.0038 - 0.0048	3.9E-03	N/A	2.0E+00 C	2.4E-01	Csoil	NO	BSL
	72-55-9	4,4'-DDE	4.1E-04 J	1.6E-02	MG/KG	IR86-SS113-0-0_5-09D	5/7	0.0038 - 0.0048	1.6E-02	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	5.8E-03 J	1.5E-02	MG/KG	IR86-SS113-0-0_5-09D	2/7	0.0038 - 0.0048	1.5E-02	N/A	1.7E+00 C*	3.4E-01	Csoil	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	2.9E-02 C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	7.7E-02 C	1.2E-03	Csoil	NO	DLBSL
	5103-71-9	alpha-Chlordane	9.3E-03 J	9.3E-03 J	MG/KG	IR86-SS110-0-0_5-09D	1/7	0.002 - 0.0025	9.3E-03	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/7	0.078 - 0.098	9.8E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/7	0.038 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	3.0E-02 C	8.1E-04	Csoil	NO	BSL
	959-98-8	Endosulfan I	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	3.7E+01 N	5.6E+00	Csoil	NO	DLBSL
	33213-65-9	Endosulfan II	2.7E-03 J	8.8E-03 J	MG/KG	IR86-SS110-0-0_5-09D	2/7	0.0038 - 0.0048	8.8E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	1031-07-8	Endosulfan sulfate	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	72-20-8	Endrin	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	1.8E+00 N	8.1E-01	Csoil	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/7	0.0038 - 0.0048	4.8E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	3.5E-03 J	3.5E-03 J	MG/KG	IR86-SS114D-0-0_5-09D	1/7	0.0038 - 0.0048	3.5E-03	N/A	1.8E+00 N	N/A	N/A	NO	BSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	5.2E-01 C*	1.8E-03	Csoil	NO	DLBSL
	5103-74-2	gamma-Chlordane	1.1E-03 J	4.3E-03 J	MG/KG	IR86-SS113-0-0_5-09D	2/7	0.002 - 0.0025	4.3E-03	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/7	0.002 - 0.0025	2.5E-03	N/A	1.1E-01 C	6.6E-03	Csoil	NO	DLBSL
	1024-57-3	Heptachlor epoxide	8.4E-03	8.4E-03	MG/KG	IR86-SS113-0-0_5-09D	1/7	0.002 - 0.0025	8.4E-03	N/A	5.3E-02 C*	8.2E-04	Csoil	NO	BSL
	72-43-5	Methoxychlor	2.9E-03 J	5.1E-02 J	MG/KG	IR86-SS110-0-0_5-09D	2/7	0.02 - 0.025	5.1E-02	N/A	3.1E+01 N	2.2E+01	Csoil	NO	BSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/7	0.035 - 0.044	4.4E-02	N/A	4.4E-01 C	4.6E-02	Csoil	NO	DLBSL
	7429-90-5	**Aluminum**	3.1E+03	1.5E+04	MG/KG	IR86-SS112-0-0_5-09D	7/7	12 - 15	1.5E+04	**5.5E+03**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	MG/KG		0/7	0.58 - 0.74	7.4E-01	4.5E-01	3.1E+00 N	N/A	N/A	NO	DLBSL
	7440-38-2	**Arsenic**	3.3E-01 J	1.4E+00	MG/KG	IR86-SS101-0-0_5-09D	6/7	0.58 - 0.74	1.4E+00	**6.3E-01**	**3.9E-01 C***	**5.8E+00**	**Csoil**	**YES**	**ASL**
	7440-39-3	Barium	1.8E+01	9.1E+01	MG/KG	IR86-SS114D-0-0_5-09D	7/7	1.5 - 1.9	9.1E+01	1.4E+01	1.5E+03 N	5.8E+02	Csoil	NO	BSL
	7440-41-7	Beryllium	3.6E-02 J	1.4E-01 J	MG/KG	IR86-SS101-0-0_5-09D	2/7	0.23 - 0.29	1.4E-01	1.0E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	6.3E-02 J	1.8E+00	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.12 - 0.15	1.8E+00	2.3E-02	7.0E+00 N	3.0E+00	N/A	NO	BSL

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	1.6E+02 J	6.0E+03	MG/KG	IR86-SS101-0-0_5-09D	7/7	290 - 370	6.0E+03	6.4E+03	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	3.4E+00	1.3E+01	MG/KG	SS111-0-0_5-09D : IR86-SS112-0-0_	7/7	0.29 - 0.37	1.3E+01	**6.1E+00**	**2.9E-01 C**	**3.8E+00**	**Csoil**	**YES**	**ASL**
	7440-48-4	Cobalt	6.1E-01 J	1.4E+00 J	MG/KG	IR86-SS112-0-0_5-09D	7/7	1.5 - 1.9	1.4E+00	2.9E-01	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	1.4E+00	1.1E+01	MG/KG	IR86-SS114-0-0_5-09D	7/7	0.29 - 0.37	1.1E+01	4.8E+00	3.1E+02 N	7.0E+02	Csoil	NO	BSL
	7439-89-6	Iron	2.6E+03 J	4.2E+03 J	MG/KG	IR86-SS111-0-0_5-09D	7/7	5.8 - 7.4	4.2E+03	3.2E+03	5.5E+03 N	1.5E+02	Csoil	NO	BSL
	7439-92-1	Lead	8.9E+00	1.7E+01	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.58 - 0.74	1.7E+01	1.2E+01	4.0E+02 NL	2.7E+02	Csoil	NO	BSL
	7439-95-4	Magnesium	9.9E+01 J	5.9E+02	MG/KG	IR86-SS101-0-0_5-09D	7/7	290 - 370	5.9E+02	2.4E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	9.5E+00	3.6E+01	MG/KG	IR86-SS114D-0-0_5-09D	7/7	0.87 - 1.1	3.6E+01	1.4E+01	1.8E+02 N	6.5E+01	Csoil	NO	BSL
	7439-97-6	Mercury	3.6E-02 J	6.4E-02 J	MG/KG	IR86-SS113-0-0_5-09D	5/7	0.096 - 0.12	6.4E-02	8.1E-02	2.3E+00 N	1.0E+00	Csoil	NO	BSL
	7440-02-0	Nickel	1.5E+00 J	3.6E+00	MG/KG	IR86-SS114D-0-0_5-09D	7/7	2.3 - 2.9	3.6E+00	1.2E+00	1.5E+02 N	1.3E+02	Csoil	NO	BSL
	7440-09-7	Potassium	2.9E+02 J	4.9E+02 J	MG/KG	IR86-SS112-0-0_5-09D	6/7	290 - 370	4.9E+02	1.2E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	3.4E-01 J	3.7E-01 J	MG/KG	IR86-SS111-0-0_5-09D	2/7	0.58 - 0.74	3.7E-01	5.6E-01	3.9E+01 N	2.1E+00	Csoil	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/7	0.29 - 0.37	3.7E-01	1.4E-01	3.9E+01 N	3.4E+00	Csoil	NO	DLBSL
	7440-23-5	Sodium	3.2E+01 J	9.7E+01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	290 - 370	9.7E+01	8.1E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/7	2.9 - 3.7	3.7E+00	3.6E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	1.1E+01	2.0E+01	MG/KG	IR86-SS112-0-0_5-09D	7/7	2.9 - 3.7	2.0E+01	8.9E+00	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	3.4E+00 J	9.2E+01 J	MG/KG	IR86-SS114D-0-0_5-09D	7/7	2.9 - 3.7	9.2E+01	1.1E+01	2.3E+03 N	1.2E+03	Csoil	NO	BSL

TABLE H 2.3

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values are two times the arithmetic mean basewide background surface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action

RSL value for Manganese (water) used as surrogate for manganese.

RSL value for Mercury (inorganic salts) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for chromium VI used as surrogate for chromium.

[5] RSL value for vanadium based on vanadium and compounds.

Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

C = Carcinogenic

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

S = concentration exceeds Csat, used Csat as screening value

C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached

Csoil = Federal Re Csoil = Federal Remediation Branch Target Screening Values, calculated source concentraion for soil which is protective of groundwater, January 2010

Created by: Debbie Stannard

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Emissions from Surface Soil in Flight Line Area	71-55-6	1,1,1-Trichloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	4.5E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	4.9E-04	N/A	4.2E-02 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	µg/m^3		0/7	N/A - N/A	5.9E-03	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	1.0E-03	N/A	1.5E-01 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	3.6E-03	N/A	1.5E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	µg/m^3		0/7	N/A - N/A	6.5E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	2.5E-04	N/A	2.1E-01 N	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	µg/m^3		0/7	N/A - N/A	2.3E-04	N/A	1.6E-04 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	µg/m^3		0/7	N/A - N/A	8.7E-04	N/A	4.1E-03 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	6.4E-04	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	1.6E-03	N/A	9.4E-02 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	µg/m^3		0/7	N/A - N/A	2.1E-03	N/A	2.4E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	7.2E-04	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	7.2E-04	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	1.0E-03 J	1.3E-03 J	µg/m^3	IR86-SS111-0-0_5-09D	2/7	N/A - N/A	1.3E-03	N/A	5.2E+02 N	N/A	N/A	NO	BSL
	591-78-6	2-Hexanone	ND	ND	µg/m^3		0/7	N/A - N/A	1.1E-03	N/A	3.1E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	µg/m^3		0/7	N/A - N/A	1.4E-03	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	4.1E-04 J	1.4E-02 J	µg/m^3	IR86-SS113-0-0_5-09D	5/7	N/A - N/A	1.4E-02	N/A	3.2E+03 N	N/A	N/A	NO	BSL
	71-43-2	Benzene	ND	ND	µg/m^3		0/7	N/A - N/A	2.1E-03	N/A	3.1E-01 C	N/A	N/A	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	µg/m^3		0/7	N/A - N/A	1.9E-03	N/A	6.6E-02 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	µg/m^3		0/7	N/A - N/A	7.3E-04	N/A	2.2E+00 C	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	µg/m^3		0/7	N/A - N/A	1.1E-02	N/A	5.2E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	µg/m^3		0/7	N/A - N/A	6.5E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	µg/m^3		0/7	N/A - N/A	4.9E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	1.2E-03	N/A	5.2E+00 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	5.6E-03	N/A	1.0E+03 N	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	µg/m^3		0/7	N/A - N/A	2.8E-03	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	µg/m^3		0/7	N/A - N/A	6.2E-03	N/A	9.4E+00 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	µg/m^3		0/7	N/A - N/A	3.0E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	µg/m^3		0/7	N/A - N/A	2.2E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	µg/m^3		0/7	N/A - N/A	7.1E-03	N/A	6.3E+02 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	µg/m^3		0/7	N/A - N/A	3.6E-04	N/A	9.0E-02 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	µg/m^3		0/7	N/A - N/A	9.0E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	µg/m^3		0/7	N/A - N/A	1.3E-03	N/A	9.7E-01 C	N/A	N/A	NO	BSL
	98-82-8	Isopropylbenzene	ND	ND	µg/m^3		0/7	N/A - N/A	1.2E-03	N/A	4.2E+01 N	N/A	N/A	NO	BSL
	79-20-9	Methyl acetate	ND	ND	µg/m^3		0/7	N/A - N/A	9.2E-04	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	ND	ND	µg/m^3		0/7	N/A - N/A	3.9E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	4.4E-03	4.4E-03	µg/m^3	IR86-SS114-0-0_5-09D	1/7	N/A - N/A	4.4E-03	N/A	5.2E+00 C	N/A	N/A	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	µg/m^3		0/7	N/A - N/A	1.5E-03	N/A	9.4E+00 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	µg/m^3		0/7	N/A - N/A	7.9E-04	N/A	1.0E+02 N	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	µg/m^3		0/7	N/A - N/A	3.2E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	ND	ND	µg/m^3		0/7	N/A - N/A	1.7E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	µg/m^3		0/7	N/A - N/A	3.0E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	µg/m^3		0/7	N/A - N/A	2.2E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	µg/m^3		0/7	N/A - N/A	3.4E-03	N/A	1.2E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	µg/m^3		0/7	N/A - N/A	7.2E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	µg/m^3		0/7	N/A - N/A	7.8E-03	N/A	1.6E-01 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	µg/m^3		0/7	N/A - N/A	1.3E-03	N/A	1.0E+01 N	N/A	N/A	NO	BSL
	92-52-4	1,1-Biphenyl	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-03	N/A	N/A	N/A	N/A	NO	NTX
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	µg/m^3		0/7	N/A - N/A	8.6E-03	N/A	2.4E-01 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	88-06-2	2,4,6-Trichlorophenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	7.8E-01 C	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-67-9	2,4-Dimethylphenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	51-28-5	2,4-Dinitrophenol	ND	ND	µg/m^3		0/7	N/A - N/A	3.5E-07	N/A	N/A	N/A	N/A	NO	NTX
	121-14-2	2,4-Dinitrotoluene	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	2.7E-02 C	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	91-58-7	2-Chloronaphthalene	ND	ND	µg/m^3		0/7	N/A - N/A	3.8E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-57-8	2-Chlorophenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.4E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-57-6	2-Methylnaphthalene	ND	ND	µg/m^3		0/7	N/A - N/A	5.2E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-48-7	2-Methylphenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	µg/m^3		0/7	N/A - N/A	2.4E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	7.2E-03 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	µg/m^3		0/7	N/A - N/A	4.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	101-55-3	4-Bromophenyl-phenylether	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	µg/m^3		0/7	N/A - N/A	9.8E-04	N/A	N/A	N/A	N/A	NO	NTX
	106-47-8	4-Chloroaniline	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	106-44-5	4-Methylphenol	ND	ND	µg/m^3		0/7	N/A - N/A	7.2E-08	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	6.3E-01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	µg/m^3		0/7	N/A - N/A	4.9E-03	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	ND	ND	µg/m^3		0/7	N/A - N/A	2.8E-05	N/A	N/A	N/A	N/A	NO	NTX
	208-96-8	Acenaphthylene	ND	ND	µg/m^3		0/7	N/A - N/A	2.8E-05	N/A	N/A	N/A	N/A	NO	NTX
	98-86-2	Acetophenone	ND	ND	µg/m^3		0/7	N/A - N/A	5.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	120-12-7	Anthracene	1.6E-06 J	6.9E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	4/7	N/A - N/A	6.9E-05	N/A	N/A	N/A	N/A	NO	NTX
	1912-24-9	Atrazine	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	100-52-7	Benzaldehyde	1.1E-03 J	1.1E-03 J	µg/m^3	IR86-SS113-0-0_5-09D	1/7	N/A - N/A	1.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	56-55-3	Benzo(a)anthracene	1.3E-09 J	1.8E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	1.8E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	50-32-8	Benzo(a)pyrene	2.6E-09 J	2.1E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.1E-07	N/A	8.7E-04 C	N/A	N/A	NO	BSL
	205-99-2	Benzo(b)fluoranthene	3.4E-09 J	2.6E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.6E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	4.9E-07 J	8.0E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	6/7	N/A - N/A	8.0E-05	N/A	N/A	N/A	N/A	NO	NTX
	207-08-9	Benzo(k)fluoranthene	1.7E-09 J	2.1E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.1E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	µg/m^3		0/7	N/A - N/A	9.3E-04	N/A	7.4E-03 C	N/A	N/A	NO	DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.0E-07 J	1.0E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/7	N/A - N/A	1.0E-07	N/A	1.0E+00 C	N/A	N/A	NO	BSL
	85-68-7	Butylbenzylphthalate	4.4E-08 J	4.4E-08 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/7	N/A - N/A	4.4E-08	N/A	N/A	N/A	N/A	NO	NTX
	105-60-2	Caprolactam	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-74-8	Carbazole	2.3E-04 J	2.3E-04 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/7	N/A - N/A	2.3E-04	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	2.4E-09 J	2.2E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	6/7	N/A - N/A	2.2E-07	N/A	8.7E-02 C	N/A	N/A	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	6.1E-09	6.1E-09	µg/m^3	IR86-SS108-0-0_5-09D	1/7	N/A - N/A	6.1E-09	N/A	8.0E-04 C	N/A	N/A	NO	BSL
	132-64-9	Dibenzofuran	ND	ND	µg/m^3		0/7	N/A - N/A	3.6E-02	N/A	N/A	N/A	N/A	NO	NTX
	84-66-2	Diethylphthalate	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	131-11-3	Dimethyl phthalate	ND	ND	µg/m^3		0/7	N/A - N/A	1.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	2.2E-08 J	2.2E-08 J	µg/m^3	IR86-SS113-0-0_5-09D	1/7	N/A - N/A	2.2E-08	N/A	N/A	N/A	N/A	NO	NTX
	117-84-0	Di-n-octylphthalate	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	3.3E-09	3.2E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	3.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	ND	ND	µg/m^3		0/7	N/A - N/A	1.4E-05	N/A	N/A	N/A	N/A	NO	NTX
	118-74-1	Hexachlorobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	2.8E-07	N/A	5.3E-03 C	N/A	N/A	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	2.1E-02 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	1.5E-09 J	1.6E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	6/7	N/A - N/A	1.6E-07	N/A	8.7E-03 C	N/A	N/A	NO	DLBSL
	78-59-1	Isophorone	ND	ND	µg/m^3		0/7	N/A - N/A	1.9E-07	N/A	2.1E+02 N	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	3.0E-05 J	3.0E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/7	N/A - N/A	3.0E-05	N/A	7.2E-02 C*	N/A	N/A	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	1.2E-03 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	9.4E-01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	µg/m^3		0/7	N/A - N/A	4.1E-03	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	µg/m^3		0/7	N/A - N/A	4.6E-07	N/A	4.8E-01 C	N/A	N/A	NO	DLBSL

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration	Qualifier	Maximum [1] Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	4.3E-06	J	1.7E-04	J	µg/m^3	IR86-SS114D-0-0_5-09D	6/7	N/A - N/A	1.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	108-95-2	Phenol	ND		ND		µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	1.3E-06		2.7E-07	J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	72-54-8	4,4'-DDD	5.2E-10	J	2.9E-09	J	µg/m^3	IR86-SS113-0-0_5-09D	3/7	N/A - N/A	2.9E-09	N/A	3.5E-02 C	N/A	N/A	NO	BSL
	72-55-9	4,4'-DDE	3.0E-10	J	1.2E-08		µg/m^3	IR86-SS113-0-0_5-09D	5/7	N/A - N/A	1.2E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	4.3E-09	J	1.1E-08		µg/m^3	IR86-SS113-0-0_5-09D	2/7	N/A - N/A	1.1E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	309-00-2	Aldrin	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	5.0E-04 C	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	1.4E-03 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	6.8E-09	J	6.8E-09	J	µg/m^3	IR86-SS110-0-0_5-09D	1/7	N/A - N/A	6.8E-09	N/A	2.4E-02 C*	N/A	N/A	NO	BSL
	12674-11-2	Aroclor-1016	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-08	N/A	1.2E-01 C	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND		ND		µg/m^3		0/7	N/A - N/A	9.4E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND		ND		µg/m^3		0/7	N/A - N/A	4.6E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	4.6E-03 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	4.8E-03 C	N/A	N/A	NO	DLBSL
	60-57-1	Dieldrin	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-09	N/A	5.3E-04 C	N/A	N/A	NO	BSL
	959-98-8	Endosulfan I	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	N/A	N/A	N/A	NO	NTX
	33213-65-9	Endosulfan II	2.0E-09	J	6.5E-09	J	µg/m^3	IR86-SS110-0-0_5-09D	2/7	N/A - N/A	6.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	1031-07-8	Endosulfan sulfate	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	72-20-8	Endrin	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	7421-93-4	Endrin aldehyde	ND		ND		µg/m^3		0/7	N/A - N/A	3.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	53494-70-5	Endrin ketone	2.6E-09	J	2.6E-09	J	µg/m^3	IR86-SS114D-0-0_5-09D	1/7	N/A - N/A	2.6E-09	N/A	N/A	N/A	N/A	NO	NTX
	58-89-9	gamma-BHC (Lindane)	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	7.8E-03 C	N/A	N/A	NO	DLBSL
	5103-74-2	gamma-Chlordane	8.1E-10	J	3.2E-09	J	µg/m^3	IR86-SS113-0-0_5-09D	2/7	N/A - N/A	3.2E-09	N/A	2.4E-02 C	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND		ND		µg/m^3		0/7	N/A - N/A	1.8E-09	N/A	1.9E-03 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	6.2E-09		6.2E-09		µg/m^3	IR86-SS113-0-0_5-09D	1/7	N/A - N/A	6.2E-09	N/A	9.4E-04 C	N/A	N/A	NO	BSL
	72-43-5	Methoxychlor	2.1E-09	J	3.8E-08	J	µg/m^3	IR86-SS110-0-0_5-09D	2/7	N/A - N/A	3.8E-08	N/A	N/A	N/A	N/A	NO	NTX
	8001-35-2	Toxaphene	ND		ND		µg/m^3		0/7	N/A - N/A	3.2E-08	N/A	7.6E-03 C	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	2.3E-03		1.1E-02		µg/m^3	IR86-SS112-0-0_5-09D	7/7	N/A - N/A	1.1E-02	N/A	5.2E-01 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	ND		ND		µg/m^3		0/7	N/A - N/A	5.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-38-2	Arsenic	2.4E-07	J	1.0E-06		µg/m^3	IR86-SS101-0-0_5-09D	6/7	N/A - N/A	1.0E-06	N/A	5.7E-04 C*	N/A	N/A	NO	BSL
	7440-39-3	Barium	1.3E-05		6.7E-05		µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	6.7E-05	N/A	5.2E-02 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	2.6E-08	J	1.0E-07	J	µg/m^3	IR86-SS101-0-0_5-09D	2/7	N/A - N/A	1.0E-07	N/A	1.0E-03 C*	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	4.6E-08	J	1.3E-06		µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	1.3E-06	N/A	1.0E-03 C**	N/A	N/A	NO	BSL

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	1.2E-04 J	4.4E-03	µg/m^3	IR86-SS101-0-0_5-09D	7/7	N/A - N/A	4.4E-03	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	2.5E-06	9.6E-06	µg/m^3	SS111-0-0_5-09D : IR86-SS112-0-0_	7/7	N/A - N/A	9.6E-06	N/A	1.1E-05 C	N/A	N/A	NO	BSL
	7440-48-4	Cobalt	4.5E-07 J	1.0E-06	µg/m^3	IR86-SS112-0-0_5-09D	7/7	N/A - N/A	1.0E-06	N/A	2.7E-04 C*	N/A	N/A	NO	BSL
	7440-50-8	Copper	1.0E-06	8.1E-06	µg/m^3	IR86-SS114-0-0_5-09D	7/7	N/A - N/A	8.1E-06	N/A	N/A	N/A	N/A	NO	NTX
	7439-89-6	Iron	1.9E-03 J	3.1E-03 J	µg/m^3	IR86-SS111-0-0_5-09D	7/7	N/A - N/A	3.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	7439-92-1	Lead	6.5E-06 J	1.3E-05	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	1.3E-05	N/A	N/A	N/A	N/A	NO	NTX
	7439-95-4	Magnesium	7.3E-05 J	4.3E-04	µg/m^3	IR86-SS101-0-0_5-09D	7/7	N/A - N/A	4.3E-04	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	7.0E-06	2.6E-05	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.6E-05	N/A	5.2E-03 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	2.6E-08 J	4.7E-08 J	µg/m^3	IR86-SS113-0-0_5-09D	5/7	N/A - N/A	4.7E-08	N/A	3.1E-02 N	N/A	N/A	NO	BSL
	7440-02-0	Nickel	1.1E-06 J	2.6E-06	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	2.6E-06	N/A	9.4E-03 C*	N/A	N/A	NO	BSL
	7440-09-7	Potassium	2.1E-04 J	3.6E-04 J	µg/m^3	IR86-SS112-0-0_5-09D	6/7	N/A - N/A	3.6E-04	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.5E-07 J	2.7E-07 J	µg/m^3	IR86-SS111-0-0_5-09D	2/7	N/A - N/A	2.7E-07	N/A	2.1E+00 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-23-5	Sodium	2.4E-05 J	7.1E-05	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	7.1E-05	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	µg/m^3		0/7	N/A - N/A	2.7E-06	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	8.1E-06	1.5E-05	µg/m^3	IR86-SS112-0-0_5-09D	7/7	N/A - N/A	1.5E-05	N/A	N/A	N/A	N/A	NO	NTX
	7440-66-6	Zinc	2.5E-06 J	6.8E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	7/7	N/A - N/A	6.8E-05	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.4

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum calculated air concentrations from surface soil concentrations. Air concentrations calculated as $C_{air} = C_{soil}*1000*(1/PEF + 1/VF)$.
PEF = 1.36E+09 m^3/kg. VF calculated for volatile constituents only, on Table 2.2A and 2.4A. PEF and VF from USEPA's Soil Screening Guidance. (USEPA, July 1996)

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online].
Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic

Created by: Debbie Stannard/WDC

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Pond	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.0E+02	A			NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.7E-01	A	4.0E+00	N	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.9E+03	R-n			NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.9E-01	A			NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.4E+00	R-c			NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.3E+02	A			NO	DLBSL
	87-61-6	1,2,3-Trichlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.9E+00	R-n			NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.5E+01	A			NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.2E-04	R-c			YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	6.5E-03	R-c			YES	DLASL
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	4.2E+02	A			NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.8E-01	A			YES	DLASL
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.0E-01	A			YES	DLASL
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.2E+02	A			NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	6.3E+01	A			NO	DLBSL
	78-93-3	2-Butanone	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	7.1E+02	R-n			NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	4.7E+00	R-n			YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	2.0E+02	R-n			NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	2.2E+03	R-n			NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.2E+00	A	5.1E+01	N	NO	DLBSL
	74-97-5	Bromochloromethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	N/A				NO	NTX
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.5E-01	A			NO	DLBSL
	75-25-2	Bromoform	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	4.3E+00	A			NO	DLBSL
	74-83-9	Bromomethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	4.7E+01	A			NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.0E+02	R-n			NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.3E-01	A	1.6E+00	N	YES	DLASL
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.0E+02	A			NO	DLBSL
	75-00-3	Chloroethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.1E+03	R-n			NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.7E+00	A			NO	DLBSL
	74-87-3	Chloromethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.9E+01	R-n			NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.7E+01	R-n			NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.4E-01	A			YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.3E+03	R-n			NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	4.0E-01	A			YES	DLASL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.9E+01	R-n			NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	5.3E+02	A			NO	DLBSL

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	6.8E+01 R-n			NO	DLBSL
	m&pXYLENE	m- and p-Xylene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.2E+03 R-n			NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.7E+03 R-n			NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	N/A			NO	NTX
	75-09-2	Methylene chloride	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	4.6E+00 A			NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.2E+01 R-c			NO	DLBSL
	95-47-6	o-Xylene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.2E+02 R-n			NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.6E+02 R-n			NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	6.9E-01 A	3.3E+00	N	NO	DLBSL
	108-88-3	Toluene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.3E+03 A			NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.0E+02 N			NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	3.4E-01 A			YES	DLASL
	79-01-6	Trichloroethene	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.5E+00 A	3.0E+01	N	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	1.3E+02 R-n			NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/2	0.5 - 0.5	5.0E-01	N/A	2.5E-02 A	2.4E+00	N	YES	DLASL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+02 R-n			NO	DLBSL
	95-94-3	1,2,4,5-Tetrachlorobenzene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	9.7E-01 A			YES	DLASL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.4E+03 A			NO	DLBSL
	58-90-2	2,3,4,6-Tetrachlorophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.0E+00 A			YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+03 A			NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.4E+00 A			YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	7.7E+01 A			NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.8E+02 A			NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	6.9E+01 A			NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.1E-01 A			YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.7E+00 R-n			YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.0E+03 A			NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	8.1E+01 A			NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.5E+01 R-n			NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+02 R-n			NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	3.7E+01 R-n			NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+01 R-n			NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.1E-02 A			YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	3.7E+01 R-n			NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	1.3E+01 A			NO	DLBSL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	N/A			NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.0E+03 A			NO	DLBSL

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.4E-01	R-c			YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+01	R-n			NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+01	R-n			NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	3.4E+00	R-c*			YES	DLASL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/2	10 - 12	1.2E+01	N/A	1.2E-01	R-c			YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	6.7E+02	A			NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	2.2E+02	R-n			NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.7E+02	R-n			NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	8.3E+03	A			NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.9E-01	R-c			YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.7E+02	R-n			NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A	3.1E-02	N	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A	3.1E-02	N	YES	DLASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A	3.1E-02	N	YES	DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.1E+02	R-n			NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A	3.1E-02	N	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.1E+01	R-n			NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.0E-02	A			YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.2E+00	A			YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.5E+03	A			NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.8E+03	R-n			NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	N/A				NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A			YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A			YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.7E+00	R-n			YES	DLASL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.7E+04	A			NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.7E+05	A			NO	DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.0E+03	A			NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	N/A				NO	NTX
	206-44-0	Fluoranthene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.3E+02	A			NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.1E+03	A			NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.8E-04	A			YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	4.4E-01	A	1.8E+01	N	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	4.0E+01	A			NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.4E+00	A			YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	3.8E-03	A	3.1E-02	N	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.5E+01	A			NO	DLBSL

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	91-20-3	Naphthalene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.4E-01	R-c*			NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	5.0E-03	A			YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	3.3E+00	A			YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	1.7E+01	A			NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/2	0.2 - 0.24	2.4E-01	N/A	2.7E-01	A			NO	DLBSL
	85-01-8	Phenanthrene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	1.1E+03	R-n			NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/2	5 - 5.9	5.9E+00	N/A	2.1E+04	A			NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/2	0.1 - 0.12	1.2E-01	N/A	8.3E+02	A			NO	DLBSL
	72-54-8	4,4'-DDD	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	3.1E-04	A			YES	DLASL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	2.2E-04	A			YES	DLASL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	2.0E-04	N	2.2E-04	A	YES	DLASL
	309-00-2	Aldrin	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	4.9E-05	A	5.0E-05	N	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	2.6E-03	A			YES	DLASL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	8.0E-04	N	8.0E-04	A	YES	DLASL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	37384-23-5	Aroclor-1262	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N	6.4E-05	A	YES	DLASL
	11100-14-4	Aroclor-1268	ND	ND	UG/L		0/2	1 - 1.1	1.1E+00	N/A	6.4E-05	N			YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	9.1E-03	A			YES	DLASL
	319-86-8	delta-BHC	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	3.7E-02	R-c			YES	DLASL
	60-57-1	Dieldrin	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	5.0E-05	N	5.2E-05	A	YES	DLASL
	959-98-8	Endosulfan I	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	6.2E+01	A			NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	6.2E+01	A			NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	6.2E+01	A			NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	5.9E-02	A			YES	DLASL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	2.9E-01	A	3.0E-01	N	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/2	0.1 - 0.11	1.1E-01	N/A	1.1E+00	R-n			NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	9.8E-01	A			NO	DLBSL
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	8.0E-04	N	8.0E-04	A	YES	DLASL
	76-44-8	Heptachlor	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	7.9E-05	A	8.0E-05	N	YES	DLASL
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/2	0.051 - 0.056	5.6E-02	N/A	3.9E-05	A			YES	DLASL
	72-43-5	Methoxychlor	ND	ND	UG/L		0/2	0.51 - 0.56	5.6E-01	N/A	1.8E+01	R-n			NO	DLBSL

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	8001-35-2	Toxaphene	ND	ND	UG/L		0/2	5.1 - 5.6	5.6E+00	N/A	2.8E-04 A			YES	DLASL
	7429-90-5	Aluminum	ND	ND	UG/L		0/2	200 - 200	2.0E+02	N/A	3.7E+03 R-n			NO	DLBSL
	7440-36-0	Antimony	ND	ND	UG/L		0/2	60 - 60	6.0E+01	N/A	5.6E+00 A			YES	DLASL
	7440-38-2	Arsenic	ND	ND	UG/L		0/2	10 - 10	1.0E+01	N/A	1.8E-02 A	1.0E+01	N	YES	DLASL
	7440-39-3	Barium	8.5E+00 J	9.2E+00 J	UG/L	IR86-SW01-08B	2/2	200 - 200	9.2E+00	N/A	1.0E+03 A			NO	BSL
	7440-41-7	Beryllium	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	4.0E+00 A			YES	DLASL
	7440-43-9	Cadmium	ND	ND	UG/L		0/2	5 - 5	5.0E+00	N/A	5.0E+00 A			YES	DLASL
	7440-70-2	Calcium	2.1E+04	2.2E+04	UG/L	IR86-SW02-08B	2/2	5000 - 5000	2.2E+04	N/A	N/A			NO	NUT
	7440-47-3	Chromium	ND	ND	UG/L		0/2	10 - 10	1.0E+01	N/A	1.0E+02 A			NO	DLBSL
	7440-48-4	Cobalt	ND	ND	UG/L		0/2	50 - 50	5.0E+01	N/A	1.1E+00 R-n			YES	DLASL
	7440-50-8	Copper	ND	ND	UG/L		0/2	25 - 25	2.5E+01	N/A	1.3E+03 A			NO	DLBSL
	7439-89-6	**Iron**	**6.9E+02**	**7.1E+02**	**UG/L**	**IR86-SW02-08B**	**2/2**	**100 - 100**	**7.1E+02**	**N/A**	**3.0E+02 A**			**YES**	**ASL**
	7439-92-1	Lead	2.7E+00 J	2.7E+00 J	UG/L	IR86-SW02-08B	1/2	10 - 10	2.7E+00	N/A	1.5E+01 M			NO	BSL
	7439-95-4	Magnesium	ND	ND	UG/L		0/2	5000 - 5000	5.0E+03	N/A	N/A			NO	NUT
	7439-96-5	Manganese	ND	ND	UG/L		0/2	15 - 15	1.5E+01	N/A	5.0E+01 A			NO	DLBSL
	7440-02-0	Nickel	ND	ND	UG/L		0/2	40 - 40	4.0E+01	N/A	6.1E+02 A			NO	DLBSL
	7440-09-7	Potassium	8.3E+02 J	8.7E+02 J	UG/L	IR86-SW01-08B	2/2	5000 - 5000	8.7E+02	N/A	N/A			NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/2	35 - 35	3.5E+01	N/A	5.0E+01 A			NO	DLBSL
	7440-22-4	Silver	ND	ND	UG/L		0/2	10 - 10	1.0E+01	N/A	1.8E+01 R-n			NO	DLBSL
	7440-23-5	Sodium	ND	ND	UG/L		0/2	5000 - 5000	5.0E+03	N/A	N/A			NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/2	25 - 25	2.5E+01	N/A	2.4E-01 A			YES	DLASL
	7440-62-2	Vanadium	1.8E+00 J	2.3E+00 J	UG/L	IR86-SW02-08B	2/2	50 - 50	2.3E+00	N/A	1.8E+01 R-n			NO	BSL
	7440-66-6	Zinc	ND	ND	UG/L		0/2	60 - 60	6.0E+01	N/A	7.4E+03 A			NO	DLBSL

TABLE H 2.5

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.
[3] Background values not available.
[4] North Carolina WQS for Human Health and Water Supply, Federal Ambient Water Quality Criteria, Consumption of Water and Organisms, or USEPA Regional Screening Levels for Tap Water.
Safe Drinking Water Act Action Level for Lead used as screening level for lead.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Above Screening Levels (DLASL)
Detection Limit Below Screening Levels (DLBSL)

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
K = Biased High
L = Biased Low
N = North Carolina 15A NCAC 2B Human Health, Amended Feb. 2010.
A= Federal Ambient Water Quality Criteria, Consumption of Water and Organisms
M = Action level for lead from Federal Drinking Water MCLs
R-n = USEPA Regional Screening Level, noncarcinogenic (therefore, RSL divided by 10, see text)
R-c = USEPA Regional Screening Level, Carcinogenic
R-c* = R-n screening level < 100x R-c screening level, therefore R-n screening value/10 used as screening level
R-c** = R-n screening level < 10x R-c screening level, therefore R-n screening value/10 used as screening level
N/A = Not available

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Pond	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.4E+02 NS	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.6E-01 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	9.1E+02 NS	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	3.3E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.4E+01 N	N/A	N/A	NO	DLBSL
	87-61-6	1,2,3-Trichlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	4.9E+00 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.2E+00 C**	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.4E-03 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	3.4E-02 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.9E+02 NS	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	4.3E-01 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	9.0E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/2	0.014 - 0.022	2.2E-02	N/A	2.8E+03 N	N/A	N/A	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/2	0.014 - 0.022	2.2E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/2	0.014 - 0.022	2.2E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	MG/KG		0/2	0.014 - 0.022	2.2E-02	N/A	6.1E+03 N	N/A	N/A	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.1E+00 C*	N/A	N/A	NO	DLBSL
	74-97-5	Bromochloromethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	N/A	N/A	N/A	NO	NTX
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.2E+01 C*	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	8.2E+01 NS	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.9E+01 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.5E+03 NS	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	3.0E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.6E+01 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.8E-01 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.4E+00 C	N/A	N/A	NO	DLBSL

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.1E+02 NS	N/A	N/A	NO	DLBSL
	m&pXYLENE	m- and p-Xylene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	3.4E+02 NS	N/A	N/A	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.7E+01 NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	9.1E-04 J	9.1E-04 J	MG/KG	IR86-SD01-08B	1/2	0.0069 - 0.011	9.1E-04	N/A	1.1E+01 C	N/A	N/A	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	4.3E+01 C	N/A	N/A	NO	DLBSL
	95-47-6	o-Xylene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	3.8E+02 NS	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.3E+02 NS	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.5E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	5.0E+02 NS	N/A	N/A	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.5E+01 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	2.8E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	7.9E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/2	0.0069 - 0.011	1.1E-02	N/A	6.0E-02 C	N/A	N/A	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	2.1E+02 NS	N/A	N/A	NO	DLBSL
	95-94-3	1,2,4,5-Tetrachlorobenzene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	58-90-2	2,3,4,6-Tetrachlorophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.2E+02 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/2	0.46 - 0.73	7.3E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.4E+02 N	N/A	N/A	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.4E+02 N	N/A	N/A	NO	DLBSL
	98-86-2	Acetophenone	1.1E-01 J	1.1E-01 J	MG/KG	IR86-SD02D-08B	1/2	0.24 - 0.38	1.1E-01	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	120-12-7	Anthracene	3.9E-03 J	3.9E-03 J	MG/KG	IR86-SD02D-08B	1/2	0.0046 - 0.0073	3.9E-03	N/A	1.7E+03 N	N/A	N/A	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	2.1E+00 C	N/A	N/A	NO	DLBSL
	100-52-7	Benzaldehyde	8.6E-02 J	8.6E-02 J	MG/KG	IR86-SD02D-08B	1/2	0.24 - 0.38	8.6E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	56-55-3	**Benzo(a)anthracene**	**1.5E-02**	**1.5E-02**	**MG/KG**	**R86-SD02-08B : IR86-SD02D-08B**	**1/2**	**0.0046 - 0.0073**	**1.5E-02**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**CPAH**
	50-32-8	**Benzo(a)pyrene**	**1.7E-03 J**	**1.9E-02**	**MG/KG**	**IR86-SD02-08B**	**2/2**	**0.0046 - 0.0073**	**1.9E-02**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**2.8E-03 J**	**3.8E-02**	**MG/KG**	**IR86-SD02D-08B**	**2/2**	**0.0046 - 0.0073**	**3.8E-02**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**CPAH**
	191-24-2	Benzo(g,h,i)perylene	5.4E-02	5.4E-02	MG/KG	IR86-SD02-08B	1/2	0.0046 - 0.0073	5.4E-02	N/A	1.7E+02 N	N/A	N/A	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**2.4E-03 J**	**3.1E-02**	**MG/KG**	**IR86-SD02-08B**	**2/2**	**0.0046 - 0.0073**	**3.1E-02**	**N/A**	**1.5E+00 C**	**N/A**	**N/A**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	2.1E-01 C	N/A	N/A	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	2.3E-01 J	7.3E-01	MG/KG	IR86-SD02D-08B	2/2	0.24 - 0.38	7.3E-01	N/A	3.5E+01 C*	N/A	N/A	NO	BSL
	85-68-7	Butylbenzylphthalate	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	2.6E+02 C*	N/A	N/A	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	86-74-8	Carbazole	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**4.1E-02**	**4.1E-02**	**MG/KG**	**IR86-SD02D-08B**	**1/2**	**0.0046 - 0.0073**	**4.1E-02**	**N/A**	**1.5E+01 C**	**N/A**	**N/A**	**YES**	**CPAH**
	53-70-3	**Dibenz(a,h)anthracene**	**7.5E-03**	**7.5E-03**	**MG/KG**	**IR86-SD02D-08B**	**1/2**	**0.0046 - 0.0073**	**7.5E-03**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**CPAH**
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	7.8E+00 N	N/A	N/A	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	4.9E+03 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.5E+01 C*	N/A	N/A	NO	DLBSL
	206-44-0	Fluoranthene	3.4E-03 J	6.2E-02	MG/KG	IR86-SD02D-08B	2/2	0.0046 - 0.0073	6.2E-02	N/A	2.3E+02 N	N/A	N/A	NO	BSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	2.3E+02 N	N/A	N/A	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.0E-01 C	N/A	N/A	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**1.9E-03 J**	**2.9E-02**	**MG/KG**	**IR86-SD02-08B**	**2/2**	**0.0046 - 0.0073**	**2.9E-02**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**CPAH**

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	78-59-1	Isophorone	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	5.1E+02 C*	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.6E+00 C*	N/A	N/A	NO	DLBSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/2	0.0093 - 0.015	1.5E-02	N/A	8.9E-01 C	N/A	N/A	NO	DLBSL
	85-01-8	Phenanthrene	1.3E-02	1.3E-02	MG/KG	IR86-SD02D-08B	1/2	0.0046 - 0.0073	1.3E-02	N/A	1.7E+03 N	N/A	N/A	NO	BSL
	108-95-2	Phenol	6.3E-02 J	6.3E-02 J	MG/KG	IR86-SD02D-08B	1/2	0.24 - 0.38	6.3E-02	N/A	1.8E+03 N	N/A	N/A	NO	BSL
	129-00-0	Pyrene	5.4E-02	5.4E-02	MG/KG	IR86-SD02D-08B	1/2	0.0046 - 0.0073	5.4E-02	N/A	1.7E+02 N	N/A	N/A	NO	BSL
	72-54-8	4,4'-DDD	1.6E-03 J	1.6E-02	MG/KG	IR86-SD02-08B	2/2	0.0046 - 0.0073	1.6E-02	N/A	2.0E+00 C	N/A	N/A	NO	BSL
	72-55-9	4,4'-DDE	1.3E-03 J	4.7E-02	MG/KG	IR86-SD02-08B	2/2	0.0046 - 0.0073	4.7E-02	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	3.0E-02	3.0E-02	MG/KG	IR86-SD02-08B	1/2	0.0046 - 0.0073	3.0E-02	N/A	1.7E+00 C*	N/A	N/A	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	2.9E-02 C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	7.7E-02 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	9.3E-03	9.3E-03	MG/KG	IR86-SD02D-08B	1/2	0.0024 - 0.0038	9.3E-03	N/A	1.6E+00 C*	N/A	N/A	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	37384-23-5	Aroclor-1262	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	N/A	N/A	N/A	NO	NTX
	11100-14-4	Aroclor-1268	ND	ND	MG/KG		0/2	0.046 - 0.073	7.3E-02	N/A	N/A	N/A	N/A	NO	NTX
	319-85-7	beta-BHC	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.0E-02 C	N/A	N/A	NO	DLBSL
	959-98-8	Endosulfan I	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	72-20-8	Endrin	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	MG/KG		0/2	0.0046 - 0.0073	7.3E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	5.2E-01 C*	N/A	N/A	NO	DLBSL
	5103-74-2	gamma-Chlordane	8.6E-04 J	8.6E-03 J	MG/KG	IR86-SD02-08B	2/2	0.0024 - 0.0038	8.6E-03	N/A	1.6E+00 C*	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/2	0.0024 - 0.0038	3.8E-03	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	2.0E-03 J	2.0E-03 J	MG/KG	IR86-SD02D-08B	1/2	0.0024 - 0.0038	2.0E-03	N/A	5.3E-02 C*	N/A	N/A	NO	BSL

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	72-43-5	Methoxychlor	ND	ND	MG/KG		0/2	0.024 - 0.038	3.8E-02	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/2	0.24 - 0.38	3.8E-01	N/A	4.4E-01 C	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	1.6E+03	5.3E+03	MG/KG	IR86-SD02D-08B	2/2	29.5 - 48.7	5.3E+03	N/A	7.7E+03 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	8.6E-01 J	1.3E+00 J	MG/KG	IR86-SD02D-08B	2/2	8.8 - 14.6	1.3E+00	N/A	3.1E+00 N	N/A	N/A	NO	BSL
	7440-38-2	**Arsenic**	**1.1E+00 J**	**2.7E+00**	**MG/KG**	**IR86-SD02D-08B**	**2/2**	**1.5 - 2.4**	**2.7E+00**	**N/A**	**3.9E-01 C***	**N/A**	**N/A**	**YES**	**ASL**
	7440-39-3	Barium	4.7E+00 J	1.8E+01 J	MG/KG	IR86-SD02D-08B	2/2	29.5 - 48.7	1.8E+01	N/A	1.5E+03 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	ND	ND	MG/KG		0/2	0.74 - 1.2	1.2E+00	N/A	1.6E+01 N	N/A	N/A	NO	DLBSL
	7440-43-9	Cadmium	1.1E+00 J	1.1E+00 J	MG/KG	IR86-SD02D-08B	1/2	0.74 - 1.2	1.1E+00	N/A	7.0E+00 N	N/A	N/A	NO	BSL
	7440-70-2	Calcium	5.6E+04	5.6E+04	MG/KG	IR86-SD02D-08B	1/2	736 - 1220	5.6E+04	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**3.2E+00**	**1.4E+01**	**MG/KG**	**IR86-SD02D-08B**	**2/2**	**1.5 - 2.4**	**1.4E+01**	**N/A**	**2.9E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	Cobalt	9.3E-01 J	9.3E-01 J	MG/KG	IR86-SD02D-08B	1/2	7.4 - 12.2	9.3E-01	N/A	2.3E+00 N	N/A	N/A	NO	BSL
	7440-50-8	Copper	8.3E-01 J	1.4E+01	MG/KG	IR86-SD02D-08B	2/2	3.7 - 6.1	1.4E+01	N/A	3.1E+02 N	N/A	N/A	NO	BSL
	7439-89-6	**Iron**	**1.7E+03**	**7.2E+03**	**MG/KG**	**IR86-SD02D-08B**	**2/2**	**14.7 - 24.3**	**7.2E+03**	**N/A**	**5.5E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7439-92-1	Lead	2.6E+00	5.1E+01	MG/KG	IR86-SD02D-08B	2/2	1.5 - 2.4	5.1E+01	N/A	4.0E+02 NL	N/A	N/A	NO	BSL
	7439-95-4	Magnesium	ND	ND	MG/KG		0/2	736 - 1220	1.2E+03	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	5.6E+00	2.1E+01	MG/KG	IR86-SD02D-08B	2/2	2.2 - 3.6	2.1E+01	N/A	1.8E+02 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	ND	ND	MG/KG		0/2	0.15 - 0.23	2.3E-01	N/A	2.4E+00 N	N/A	N/A	NO	DLBSL
	7440-02-0	Nickel	ND	ND	MG/KG		0/2	5.9 - 9.7	9.7E+00	N/A	1.5E+02 N	N/A	N/A	NO	DLBSL
	7440-09-7	Potassium	7.1E+01 J	2.9E+02 J	MG/KG	IR86-SD02D-08B	2/2	736 - 1220	2.9E+02	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	MG/KG		0/2	5.2 - 8.5	8.5E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	7440-22-4	Silver	ND	ND	MG/KG		0/2	1.5 - 2.4	2.4E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	7440-23-5	Sodium	ND	ND	MG/KG		0/2	736 - 1220	1.2E+03	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/2	3.7 - 6.1	6.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	5.7E+00 J	2.4E+01	MG/KG	IR86-SD02D-08B	2/2	7.4 - 12.2	2.4E+01	N/A	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	9.9E+00	1.3E+02	MG/KG	IR86-SD02D-08B	2/2	8.8 - 14.6	1.3E+02	N/A	2.3E+03 N	N/A	N/A	NO	BSL

TABLE H 2.6

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for 2-Nitroaniline used as surrogate for 3-Nitroaniline.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

The soil value Facilities, USEPA, July 14, 1994.

RSL value for Manganese (water) used as surrogate for manganese.

RSL value for Mercury (inorganic salts) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for chromium VI used as surrogate for chromium.

[5] RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

Rationale Code		
	Selection Reason:	Above Screening Levels (ASL)
		Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
		Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
	Deletion Reason:	No Toxicity Information (NTX)
		Essential Nutrient (NUT)
		Below Screening Level (BSL)
		Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

C = Carcinogenic

N = Noncarcinogenic

S = concentration exceeds Csat, used Csat as screening value

C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached

Created by: Debbie Stannard

Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.7

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Water in Drainage Ditch	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.0E+02 A			NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	1.7E-01 A	4.0E+00	N	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	5.9E+03 R-n			NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	5.9E-01 A			YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.4E+00 C-n			NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.3E+02 A			NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.5E+01 A			NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C-n			YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C-n			YES	DLASL
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	4.2E+02 A			NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.8E-01 A			YES	DLASL
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	5.0E-01 A			YES	DLASL
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.2E+02 A			NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	6.3E+01 A			NO	DLBSL
	78-93-3	2-Butanone	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	7.1E+02 R-n			NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/6	5 - 5	5.0E+00	N/A	4.7E+00 R-n			YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/6	5 - 5	5.0E+00	N/A	2.0E+02 R-n			NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	2.2E+03 R-n			NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.2E+00 A	5.1E+01	N	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	5.5E-01 A			NO	DLBSL
	75-25-2	Bromoform	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	4.3E+00 A			NO	DLBSL
	74-83-9	Bromomethane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	4.7E+01 A			NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.0E+02 R-n			NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	2.3E-01 A	1.6E+00	N	YES	DLASL
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.0E+02 A			NO	DLBSL
	75-00-3	Chloroethane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.1E+03 R-n			NO	DLBSL
	67-66-3	Chloroform	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	5.7E+00 A			NO	DLBSL
	74-87-3	Chloromethane	1.8E-01 J	3.0E-01 J	UG/L	IR86-SW110-09D	5/6	1 - 1	3.0E-01	N/A	1.9E+01 R-n			NO	BSL
	156-59-2	cis-1,2-Dichloroethene	1.2E-01 J	1.3E-01 J	UG/L	IR86-SW113-09D	2/6	1 - 1	1.3E-01	N/A	7.3E+00 R-n			NO	BSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.4E-01 A			YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.3E+03 R-n			NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	4.0E-01 A			YES	DLASL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.9E+01 R-n			NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	5.3E+02 A			NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	6.8E+01 R-n			NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.7E+03 R-n			NO	DLBSL

TABLE H 2.7

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/6	5 - 5	5.0E+00	N/A	N/A			NO	NTX
	75-09-2	Methylene chloride	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	4.6E+00 A			NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.2E+01 C-n			NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.6E+02 R-n			NO	DLBSL
	127-18-4	Tetrachloroethene	2.0E-01 J	2.6E-01 J	UG/L	IR86-SW113-09D	2/6	1 - 1	2.6E-01	N/A	6.9E-01 A	3.3E+00	N	NO	BSL
	108-88-3	Toluene	5.7E-01 J	5.7E-01 J	UG/L	IR86-SW105-09D	1/6	1 - 1	5.7E-01	N/A	1.3E+03 A			NO	BSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.0E+02 N			NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.4E-01 A			YES	DLASL
	79-01-6	Trichloroethene	1.5E-01 J	1.9E-01 J	UG/L	IR86-SW113-09D	2/6	0.5 - 0.5	1.9E-01	N/A	2.5E+00 A	3.0E+01	N	NO	BSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	1.3E+02 R-n			NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	2.5E-02 A	2.4E+00	N	YES	DLASL
	1330-20-7	Xylene, total	ND	ND	UG/L		0/6	0.5 - 0.5	5.0E-01	N/A	3.5E+02 N			NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.8E+02 R-n			NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.4E+03 A			NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.8E+03 A			NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.4E+00 A			YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	7.7E+01 A			NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.8E+02 A			NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	6.9E+01 A			NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/6	2 - 2.1	2.1E+00	N/A	1.1E-01 A			YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	3.7E+00 R-n			YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.0E+03 A			NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	8.1E+01 A			NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.5E+01 R-n			NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.8E+02 R-n			NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/6	2 - 2.1	2.1E+00	N/A	3.7E+01 R-n			NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	1.8E+01 R-n			NO	DLBSL
	m&pCRESOL	3- and 4-Methylphenol	ND	ND	UG/L		0/6	2 - 2.1	2.1E+00	N/A	1.8E+01 R-n			NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	2.1E-02 A			YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	3.7E+01 R-n			NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	1.3E+01 A			NO	DLBSL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	N/A			NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.0E+03 A			NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/5	5 - 5.2	5.2E+00	N/A	3.4E-01 C-n			YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.8E+01 R-n			NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/6	2 - 2.1	2.1E+00	N/A	3.4E+00 C-n*			NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.2E-01 C-n			YES	DLASL

TABLE H 2.7

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	6.7E+02 A			NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	2.2E+02 R-n			NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	3.7E+02 R-n			NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	8.3E+03 A			NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	2.9E-01 C-n			YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	3.7E+02 R-n			NO	DLBSL
	56-55-3	**Benzo(a)anthracene**	**1.4E-01 J**	**1.5E-01 J**	**UG/L**	**IR86-SW110-09D**	**3/6**	**0.2 - 0.21**	**1.5E-01**	**N/A**	**3.8E-03 A**	**3.1E-02**	**N**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	**3.4E-02 J**	**3.4E-02 J**	**UG/L**	**IR86-SW110-09D**	**1/6**	**0.2 - 0.21**	**3.4E-02**	**N/A**	**3.8E-03 A**	**3.1E-02**	**N**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**4.6E-02 J**	**8.3E-02 J**	**UG/L**	**IR86-SW110-09D**	**2/6**	**0.2 - 0.21**	**8.3E-02**	**N/A**	**3.8E-03 A**	**3.1E-02**	**N**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	1.1E+02 R-n			NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.1E+01 R-n			NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.0E-02 A			YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.2E+00 A			YES	DLASL
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/6	2 - 2.1	2.1E+00	N/A	1.5E+03 A			NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	1.8E+03 R-n			NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	N/A			NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	3.8E-03 A	3.1E-02	N	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	3.7E+00 R-n			NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.7E+04 A			NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	2.7E+05 A			NO	DLBSL
	84-74-2	Di-n-butylphthalate	2.1E-01 J	3.6E-01 J	UG/L	IR86-SW106-09D	2/6	5 - 5.2	3.6E-01	N/A	2.0E+03 A			NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	N/A			NO	NTX
	206-44-0	Fluoranthene	2.5E-02 J	9.2E-02 J	UG/L	IR86-SW110-09D	4/6	0.2 - 0.21	9.2E-02	N/A	1.3E+02 A			NO	BSL
	86-73-7	Fluorene	ND	ND	UG/L		0/6	0.2 - 0.21	2.1E-01	N/A	1.1E+03 A			NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.8E-04 A			YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	4.4E-01 A	1.8E+01	N	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	4.0E+01 A			NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	1.4E+00 A			YES	DLASL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**6.8E-02 J**	**6.8E-02 J**	**UG/L**	**IR86-SW106-09D**	**1/6**	**0.2 - 0.21**	**6.8E-02**	**N/A**	**3.8E-03 A**	**3.1E-02**	**N**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	3.5E+01 A			NO	DLBSL
	91-20-3	**Naphthalene**	**1.9E-01 J**	**1.9E-01 J**	**UG/L**	**IR86-SW105D-09D**	**1/6**	**0.2 - 0.21**	**1.9E-01**	**N/A**	**1.4E-01 C-n***			**YES**	**ASL**
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	5.0E-03 A			YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	3.3E+00 A			YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	1.7E+01 A			NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/6	5 - 5.2	5.2E+00	N/A	2.7E-01 A			YES	DLASL

TABLE H 2.7

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	2.9E-02 J	3.7E-02 J	UG/L	IR86-SW110-09D	2/6	0.2 - 0.21	3.7E-02	N/A	1.1E+03 R-n			NO	BSL
	108-95-2	Phenol	ND	ND	UG/L		0/6	1 - 1	1.0E+00	N/A	2.1E+04 A			NO	DLBSL
	129-00-0	Pyrene	2.3E-02 J	7.9E-02 J	UG/L	IR86-SW110-09D	4/6	0.2 - 0.21	7.9E-02	N/A	8.3E+02 A			NO	BSL
	72-54-8	4,4'-DDD	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	3.1E-04 A			YES	DLASL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	2.2E-04 A			YES	DLASL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	2.0E-04 N	2.2E-04	A	YES	DLASL
	309-00-2	Aldrin	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	4.9E-05 A	5.0E-05	N	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	2.6E-03 A			YES	DLASL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	8.0E-04 N	8.0E-04	A	YES	DLASL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/6	0.25 - 0.26	2.6E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/6	0.51 - 0.53	5.3E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/6	0.61 - 0.63	6.3E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/6	0.51 - 0.53	5.3E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/6	0.51 - 0.53	5.3E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/6	0.51 - 0.53	5.3E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/6	0.25 - 0.26	2.6E-01	N/A	6.4E-05 N	6.4E-05	A	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	9.1E-03 A			YES	DLASL
	319-86-8	delta-BHC	1.4E-02 J	1.4E-02 J	UG/L	IR86-SW108-09D	1/6	0.025 - 0.026	1.4E-02	N/A	3.7E-02 C-n			NO	BSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	5.0E-05 N	5.2E-05	A	YES	DLASL
	959-98-8	Endosulfan I	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	6.2E+01 A			NO	DLBSL
	33213-65-9	Endosulfan II	4.0E-02	5.7E-02	UG/L	IR86-SW106-09D	2/6	0.025 - 0.026	5.7E-02	N/A	6.2E+01 A			NO	BSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	6.2E+01 A			NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	5.9E-02 A			NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	2.9E-01 A	3.0E-01	N	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	1.1E+00 R-n			NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	9.8E-01 A			NO	DLBSL
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	8.0E-04 N	8.0E-04	A	YES	DLASL
	76-44-8	Heptachlor	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	7.9E-05 A	8.0E-05	N	YES	DLASL
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/6	0.025 - 0.026	2.6E-02	N/A	3.9E-05 A			YES	DLASL
	72-43-5	Methoxychlor	ND	ND	UG/L		0/6	0.1 - 0.1	1.0E-01	N/A	1.8E+01 R-n			NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/6	0.25 - 0.26	2.6E-01	N/A	2.8E-04 A			YES	DLASL
	7429-90-5	**Aluminum**	**8.8E+01 J**	**3.8E+03**	**UG/L**	**IR86-SW110-09D**	**4/6**	**200 - 200**	**3.8E+03**	**N/A**	**3.7E+03 R-n**			**YES**	**ASL**
	7440-36-0	Antimony	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	5.6E+00 A			YES	DLASL
	7440-38-2	Arsenic	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	1.8E-02 A	1.0E+01	N	YES	DLASL
	7440-39-3	Barium	8.8E+00 J	6.7E+01	UG/L	IR86-SW110-09D	6/6	20 - 20	6.7E+01	N/A	1.0E+03 A			NO	BSL
	7440-41-7	Beryllium	ND	ND	UG/L		0/6	4 - 4	4.0E+00	N/A	4.0E+00 A			YES	DLASL
	7440-43-9	Cadmium	2.1E+00	2.1E+00	UG/L	IR86-SW110-09D	1/6	2 - 2	2.1E+00	N/A	5.0E+00 A			NO	BSL

TABLE H 2.7

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	3.2E+04	7.5E+04	UG/L	IR86-SW105-09D	6/6	5000 - 5000	7.5E+04	N/A	N/A			NO	NUT
	7440-47-3	Chromium	1.2E+01	1.2E+01	UG/L	IR86-SW110-09D	1/6	5 - 5	1.2E+01	N/A	1.0E+02 A			NO	BSL
	7440-48-4	Cobalt	ND	ND	UG/L		0/6	25 - 25	2.5E+01	N/A	1.1E+00 R-n			YES	DLASL
	7440-50-8	Copper	1.8E+00 J	1.1E+01	UG/L	IR86-SW110-09D	3/6	5 - 5	1.1E+01	N/A	1.3E+03 A			NO	BSL
	7439-89-6	**Iron**	**6.3E+02**	**3.3E+04**	**UG/L**	**IR86-SW110-09D**	**6/6**	**100 - 100**	**3.3E+04**	**N/A**	**3.0E+02 A**			**YES**	**ASL**
	7439-92-1	Lead	3.2E+00 J	1.0E+01	UG/L	IR86-SW110-09D	2/6	10 - 10	1.0E+01	N/A	1.5E+01 M			NO	BSL
	7439-95-4	Magnesium	2.0E+03 J	4.6E+03 J	UG/L	IR86-SW113-09D	6/6	5000 - 5000	4.6E+03	N/A	N/A			NO	NUT
	7439-96-5	**Manganese**	**4.0E+01**	**4.1E+02**	**UG/L**	**IR86-SW110-09D**	**6/6**	**15 - 15**	**4.1E+02**	**N/A**	**5.0E+01 A**			**YES**	**ASL**
	7439-97-6	Mercury	ND	ND	UG/L		0/6	0.1 - 0.1	1.0E-01	N/A	1.0E+00 N			NO	DLBSL
	7440-02-0	Nickel	ND	ND	UG/L		0/6	40 - 40	4.0E+01	N/A	6.1E+02 A			NO	DLBSL
	7440-09-7	Potassium	1.9E+03 J	3.4E+03 J	UG/L	IR86-SW105-09D	5/6	5000 - 5000	3.4E+03	N/A	N/A			NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/6	10 - 10	1.0E+01	N/A	5.0E+01 A			NO	DLBSL
	7440-22-4	Silver	ND	ND	UG/L		0/6	5 - 5	5.0E+00	N/A	1.8E+01 R-n			NO	DLBSL
	7440-23-5	Sodium	5.3E+03	2.2E+04	UG/L	IR86-SW113-09D	6/6	5000 - 5000	2.2E+04	N/A	N/A			NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/6	50 - 50	5.0E+01	N/A	2.4E-01 A			YES	DLASL
	7440-62-2	**Vanadium**	**2.2E+01 J**	**2.2E+01 J**	**UG/L**	**IR86-SW110-09D**	**1/6**	**50 - 50**	**2.2E+01**	**N/A**	**1.8E+01 R-n**			**YES**	**ASL**
	7440-66-6	Zinc	6.1E+00 J	8.4E+01	UG/L	IR86-SW110-09D	4/6	20 - 20	8.4E+01	N/A	7.4E+03 A			NO	BSL

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] North Carolina WQS for Human Health and Water Supply, Federal Ambient Water Quality Criteria, Consumption of Water and Organisms, or USEPA Regional Screening Levels for Tap Water.
Safe Drinking Water Act Action Level for Lead used as screening level for lead.

[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Above Screening Levels (DLASL)
Detection Limit Below Screening Levels (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
K = Biased High
L = Biased Low
N = North Carolina WQS for Human Health and Water Supply, Amended Dec. 1, 2009.
A= Federal Ambient Water Quality Criteria, Consumption of Water and Organisms
M = Action level for lead from Federal Drinking Water MCLs
R-n = USEPA Regional Screening Level, noncarcinogenic (therefore, RSL divided by 10, see text)
R-c = USEPA Regional Screening Level, Carcinogenic
R-c* = R-n screening level < 100x R-c screening level, therefore R-n screening value/10 used as screening level
R-c** = R-n screening level < 10x R-c screening level, therefore R-n screening value/10 used as screening level
N/A = Not available

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Drainage Ditch	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.4E+02 NS	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.6E-01 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	9.1E+02 NS	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	3.3E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.4E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.2E+01 C**	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.4E-03 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	3.4E-02 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	2.8E-03 J	5.9E-03 J	MG/KG	IR86-SD106-0-0_5-09D	2/8	0.0046 - 0.016	5.9E-03	N/A	1.9E+02 NS	N/A	N/A	NO	BSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	4.3E-01 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	8.9E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	2.7E-03 J	2.7E-03 J	MG/KG	IR86-SD108-0-0_5-09D	1/8	0.0046 - 0.016	2.7E-03	N/A	2.4E+00 C	N/A	N/A	NO	BSL
	106-46-7	1,4-Dichlorobenzene	2.6E-03 J	2.6E-03 J	MG/KG	IR86-SD108-0-0_5-09D	1/8	0.0046 - 0.016	2.6E-03	N/A	2.4E+00 C	N/A	N/A	NO	BSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/1	0.0092 - 0.013	1.3E-02	N/A	2.8E+03 N	N/A	N/A	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/8	0.0092 - 0.033	3.3E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/8	0.0092 - 0.033	3.3E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	2.5E-02 J	5.0E-02 J	MG/KG	IR86-SD110-0-0_5-09D	2/8	0.018 - 0.065	5.0E-02	N/A	6.1E+03 N	N/A	N/A	NO	DLBSL
	71-43-2	Benzene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.1E+00 C*	N/A	N/A	NO	BSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/8	0.0092 - 0.033	3.3E-02	N/A	6.1E+01 C*	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/8	0.0092 - 0.033	3.3E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	8.2E+01 NS	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.9E+01 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.5E+03 NS	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.9E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.6E+01 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.8E-01 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.4E+00 C	N/A	N/A	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.1E+02 NS	N/A	N/A	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/7	0.0046 - 0.016	1.6E-02	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.7E+01 NS	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.1E+01 C	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	4.3E+01 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.3E+02 NS	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.5E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	5.0E+02 NS	N/A	N/A	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.5E+01 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	1.7E+00 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	2.8E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	7.9E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.0E-02 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/8	0.0046 - 0.016	1.6E-02	N/A	6.3E+01 NS	N/A	N/A	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	2.1E+02 NS	N/A	N/A	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	4.6E+00 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	4.4E+01 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.2E+02 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/8	0.34 - 3.6	3.6E+00	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.6E+00 C*	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	m&pCRESOL	3- and 4-Methylphenol	ND	ND	MG/KG		0/8	0.069 - 0.73	7.3E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/7	0.26 - 2.7	2.7E+00	N/A	1.1E+00 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/8	0.4 - 4.2	4.2E+00	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/6	0.26 - 2.7	2.7E+00	N/A	2.4E+00 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/8	0.31 - 3.3	3.3E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/7	0.0034 - 0.53	5.3E-01	N/A	3.4E+02 N	N/A	N/A	NO	BSL
	208-96-8	Acenaphthylene	5.5E-02 J	2.3E-01 J	MG/KG	IR86-SD108-0-0_5-09D	2/7	0.0034 - 0.53	2.3E-01	N/A	3.4E+02 N	N/A	N/A	NO	BSL
	98-86-2	Acetophenone	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	9.3E-03	1.2E+00	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.0034 - 0.53	1.2E+00	N/A	1.7E+03 N	N/A	N/A	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	2.1E+00 C	N/A	N/A	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	56-55-3	**Benzo(a)anthracene**	**5.6E-02**	**4.7E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**4.7E+00**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	**6.6E-02**	**6.2E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**6.2E+00**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**1.1E-01**	**1.2E+01**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**1.2E+01**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	6.7E-02	6.6E+00	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.0034 - 0.53	6.6E+00	N/A	1.7E+02 N	N/A	N/A	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**3.8E-02**	**4.0E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**4.0E+00**	**N/A**	**1.5E+00 C**	**N/A**	**N/A**	**YES**	**ASL**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/8	0.034 - 0.36	3.6E-01	N/A	2.1E-01 C	N/A	N/A	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.5E+01 C*	N/A	N/A	NO	DLBSL
	85-68-7	Butylbenzylphthalate	1.1E-01 J	2.8E-01 J	MG/KG	IR86-SD108-0-0_5-09D	2/8	0.26 - 2.7	2.8E-01	N/A	2.6E+02 C*	N/A	N/A	NO	BSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	86-74-8	Carbazole	1.7E-01 J	9.8E-01 J	MG/KG	IR86-SD108-0-0_5-09D	4/8	0.26 - 2.7	9.8E-01	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**7.8E-02**	**7.0E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**7.0E+00**	**N/A**	**1.5E+01 C**	**N/A**	**N/A**	**YES**	**CPAH**
	53-70-3	**Dibenz(a,h)anthracene**	**1.9E-02**	**1.0E-01**	**MG/KG**	**IR86-SD112-0-0_5-09D**	**3/7**	**0.0034 - 0.53**	**1.0E-01**	**N/A**	**1.5E-02 C**	**N/A**	**N/A**	**YES**	**ASL**
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	7.8E+00 N	N/A	N/A	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	4.9E+03 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	3.0E-02 J	2.3E-01 J	MG/KG	IR86-SD108-0-0_5-09D	2/8	0.26 - 2.7	2.3E-01	N/A	6.1E+02 N	N/A	N/A	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	1.1E-01	1.4E+01	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.0034 - 0.53	1.4E+01	N/A	2.3E+02 N	N/A	N/A	NO	BSL
	86-73-7	Fluorene	1.5E-03 J	1.0E-02	MG/KG	IR86-SD112-0-0_5-09D	2/7	0.0034 - 0.53	1.0E-02	N/A	2.3E+02 N	N/A	N/A	NO	BSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.0E-01 C	N/A	N/A	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.2E+00 C**	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**6.3E-02**	**5.7E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.0034 - 0.53**	**5.7E+00**	**N/A**	**1.5E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	78-59-1	**Isophorone**	**ND**	**ND**	**MG/KG**		**0/8**	**0.18 - 2**	**2.0E+00**	**N/A**	**5.1E+02 C***	**N/A**	**N/A**	**NO**	**DLBSL**
	91-20-3	Naphthalene	1.7E-03 J	6.8E-03 J	MG/KG	IR86-SD112-0-0_5-09D	2/7	0.0034 - 0.53	6.8E-03	N/A	3.6E+00 C*	N/A	N/A	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/8	0.43 - 4.6	4.6E+00	N/A	8.9E-01 C	N/A	N/A	YES	DLASL

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	85-01-8	Phenanthrene	2.7E-02	3.6E+00	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.0034 - 0.53	3.6E+00	N/A	1.7E+03 N	N/A	N/A	NO	BSL
	108-95-2	Phenol	ND	ND	MG/KG		0/8	0.26 - 2.7	2.7E+00	N/A	1.8E+03 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	9.2E-02	8.1E+00	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.0034 - 0.53	8.1E+00	N/A	1.7E+02 N	N/A	N/A	NO	BSL
	72-54-8	4,4'-DDD	4.0E-04 J	4.0E-04 J	MG/KG	IR86-SD107D-0-0_5-09D	1/8	0.0036 - 0.12	4.0E-04	N/A	2.0E+00 C	N/A	N/A	NO	BSL
	72-55-9	4,4'-DDE	7.2E-04 J	6.8E-03 J	MG/KG	IR86-SD110-10A	2/8	0.0036 - 0.12	6.8E-03	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	2.1E-03 J	1.7E-02 J	MG/KG	IR86-SD110-10A	4/8	0.0036 - 0.12	1.7E-02	N/A	1.7E+00 C*	N/A	N/A	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	2.9E-02 C*	N/A	N/A	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	7.7E-02 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/8	0.076 - 0.19	1.9E-01	N/A	1.4E-01 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/8	0.037 - 0.094	9.4E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	2.7E-01 C	N/A	N/A	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	MG/KG		0/8	0.0036 - 0.12	1.2E-01	N/A	3.0E-02 C	N/A	N/A	YES	DLASL
	959-98-8	Endosulfan I	4.6E-03 J	4.6E-03 J	MG/KG	IR86-SD105-10A	1/8	0.0018 - 0.06	4.6E-03	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	MG/KG		0/8	0.0036 - 0.12	1.2E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	MG/KG		0/8	0.0036 - 0.12	1.2E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	72-20-8	Endrin	ND	ND	MG/KG		0/8	0.0036 - 0.12	1.2E-01	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	7421-93-4	Endrin aldehyde	1.2E-03 J	2.2E-02 J	MG/KG	IR86-SD108-10A	3/8	0.0036 - 0.12	2.2E-02	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	4.6E-03 J	6.7E-02 J	MG/KG	IR86-SD108-10A	4/8	0.0036 - 0.12	6.7E-02	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	5.2E-01 C*	N/A	N/A	NO	DLBSL
	5103-74-2	gamma-Chlordane	7.0E-04 J	7.0E-04 J	MG/KG	IR86-SD107-0-0_5-09D	1/8	0.0018 - 0.06	7.0E-04	N/A	1.6E+00 C*	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/8	0.0018 - 0.06	6.0E-02	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	3.4E-03 J	3.4E-03 J	MG/KG	IR86-SD113-10A	1/8	0.0018 - 0.06	3.4E-03	N/A	5.3E-02 C*	N/A	N/A	NO	DLBSL
	72-43-5	Methoxychlor	ND	ND	MG/KG		0/8	0.018 - 0.6	6.0E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/1	0.033 - 0.034	3.4E-02	N/A	4.4E-01 C	N/A	N/A	NO	DLBSL
	7429-90-5	**Aluminum**	**3.2E+03**	**1.7E+04**	**MG/KG**	**IR86-SD109-0-0_5-09D**	**8/8**	**11 - 28**	**1.7E+04**	**N/A**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	**Antimony**	**2.9E-01 J**	**5.9E+00**	**MG/KG**	**IR86-SD108-0-0_5-09D**	**8/8**	**0.57 - 1.4**	**5.9E+00**	**N/A**	**3.1E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-38-2	**Arsenic**	**1.1E+00**	**9.7E+00**	**MG/KG**	**IR86-SD112-0-0_5-09D**	**7/8**	**0.57 - 1.4**	**9.7E+00**	**N/A**	**3.9E-01 C***	**N/A**	**N/A**	**YES**	**ASL**
	7440-39-3	Barium	2.0E+01	7.8E+01	MG/KG	IR86-SD112-0-0_5-09D	8/8	1.5 - 3.6	7.8E+01	N/A	1.5E+03 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	5.9E-02 J	1.2E+00	MG/KG	IR86-SD112-0-0_5-09D	8/8	0.23 - 0.56	1.2E+00	N/A	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	**Cadmium**	**6.9E-01**	**8.2E+00**	**MG/KG**	**IR86-SD110-0-0_5-09D**	**8/8**	**0.11 - 0.28**	**8.2E+00**	**N/A**	**7.0E+00 N**	**N/A**	**N/A**	**YES**	**ASL**

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-70-2	Calcium	1.5E+03	3.5E+04	MG/KG	IR86-SD106-0-0_5-09D	8/8	280 - 700	3.5E+04	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**5.7E+00**	**3.6E+01**	**MG/KG**	**IR86-SD112-0-0_5-09D**	**8/8**	**0.28 - 0.7**	**3.6E+01**	**N/A**	**2.9E-01 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	**Cobalt**	**1.0E+00 J**	**7.9E+00**	**MG/KG**	**IR86-SD110-0-0_5-09D**	**8/8**	**1.5 - 3.6**	**7.9E+00**	**N/A**	**2.3E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.9E+00	3.5E+01	MG/KG	IR86-SD110-0-0_5-09D	8/8	0.28 - 0.7	3.5E+01	N/A	3.1E+02 N	N/A	N/A	NO	BSL
	7439-89-6	**Iron**	**3.4E+03**	**3.0E+04**	**MG/KG**	**IR86-SD112-0-0_5-09D**	**8/8**	**5.7 - 14**	**3.0E+04**	**N/A**	**5.5E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7439-92-1	Lead	4.1E+00	6.6E+01	MG/KG	IR86-SD108-0-0_5-09D	8/8	0.57 - 1.4	6.6E+01	N/A	4.0E+02 NL	N/A	N/A	NO	BSL
	7439-95-4	Magnesium	3.0E+02 J	2.6E+03	MG/KG	IR86-SD106-0-0_5-09D	8/8	280 - 700	2.6E+03	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.6E+01	1.1E+02	MG/KG	IR86-SD105-0-0_5-09D	8/8	0.85 - 2.1	1.1E+02	N/A	1.8E+02 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	1.3E-02 J	1.1E-01 J	MG/KG	IR86-SD110-0-0_5-09D	8/8	0.097 - 0.23	1.1E-01	N/A	2.4E+00 N	N/A	N/A	NO	BSL
	7440-02-0	Nickel	2.2E+00 J	1.9E+01	MG/KG	IR86-SD110-0-0_5-09D	8/8	2.3 - 5.6	1.9E+01	N/A	1.5E+02 N	N/A	N/A	NO	BSL
	7440-09-7	Potassium	2.2E+02 J	9.9E+02 J	MG/KG	IR86-SD112-0-0_5-09D	8/8	280 - 700	9.9E+02	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	9.8E-01 J	2.8E+01	MG/KG	IR86-SD108-0-0_5-09D	4/8	0.57 - 1.4	2.8E+01	N/A	3.9E+01 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	5.7E-02 J	1.5E+00	MG/KG	IR86-SD112-0-0_5-09D	8/8	0.28 - 0.7	1.5E+00	N/A	3.9E+01 N	N/A	N/A	NO	BSL
	7440-23-5	Sodium	ND	ND	MG/KG		0/8	280 - 700	7.0E+02	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	6.9E-01 J	3.4E+00 J	MG/KG	IR86-SD108-0-0_5-09D	3/8	2.8 - 7	3.4E+00	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	**Vanadium**	**8.2E+00**	**5.2E+01**	**MG/KG**	**IR86-SD112-0-0_5-09D**	**8/8**	**2.8 - 7**	**5.2E+01**	**N/A**	**3.9E+01 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-66-6	Zinc	1.6E+01	1.9E+02	MG/KG	IR86-SD110-0-0_5-09D	8/8	2.8 - 7	1.9E+02	N/A	2.3E+03 N	N/A	N/A	NO	BSL

TABLE H 2.8

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.

RSL value for p-Cresol used as surrogate for 3- and 4-methylphenol.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.

RSL value for Manganese (water) used as surrogate for manganese.

RSL value for Mercury (inorganic salts) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for chromium VI used as surrogate for chromium.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

C = Carcinogenic

N = Noncarcinogenic

S = concentration exceeds Csat, used Csat as screening value

C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached

Created by: Debbie Stannard

Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.9

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Soil*in Industrial Area	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.4E+02 NS	1.2E+00	Csoil	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	5.6E-01 C	1.2E-03	Csoil	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	9.1E+02 NS	9.2E+03	Csoil	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	3.3E+00 C	3.0E-02	Csoil	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.4E+01 N	4.6E-02	Csoil	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.2E+00 C**	2.2E+00	Csoil	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	5.4E-03 C	2.5E-04	Csoil	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	3.4E-02 C	9.7E-05	Csoil	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.9E+02 NS	2.4E-01	Csoil	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	4.3E-01 C	2.0E-03	Csoil	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	8.9E-01 C*	3.3E-03	Csoil	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.4E+00 C	7.6E+00	Csoil	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.4E+00 C	7.0E-02	Csoil	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	MG/KG		0/21	0.0081 - 0.031	3.1E-02	N/A	2.8E+03 N	1.6E+01	Csoil	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/23	0.0081 - 0.031	3.1E-02	N/A	2.1E+01 N	1.2E+00	Csoil	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/23	0.0081 - 0.031	3.1E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	4.9E-03 J	2.5E-02 J	MG/KG	IR86-SB104-08-09-09D	3/23	0.012 - 0.062	2.5E-02	N/A	6.1E+03 N	2.4E+01	Csoil	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.1E+00 C*	7.3E-03	Csoil	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.7E-01 C	2.9E-03	Csoil	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/23	0.0081 - 0.031	3.1E-02	N/A	6.2E+01 C*	1.9E-02	Csoil	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/23	0.0081 - 0.031	3.1E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	8.2E+01 NS	3.8E+00	Csoil	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.1E-01 C	2.0E-03	Csoil	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.9E+01 N	4.5E-01	Csoil	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.5E+03 NS	1.6E+01	Csoil	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.9E-01 C	3.4E-01	Csoil	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.2E+01 N	1.5E-02	Csoil	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.6E+01 N	3.6E-01	Csoil	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.8E-01 C	1.9E-03	Csoil	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.8E+01 N	2.9E+01	Csoil	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	5.4E+00 C	8.1E+00	Csoil	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.1E+02 NS	1.3E+00	Csoil	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	7.4E-03 J	7.4E-03 J	MG/KG	IR86-SS107-0-0_5-09D	1/23	0.0041 - 0.021	7.4E-03	N/A	5.7E+01 NS	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.1E+01 C	2.3E-02	Csoil	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	4.3E+01 C	8.5E-02	Csoil	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.3E+02 NS	9.2E-01	Csoil	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	5.5E-01 C	5.0E-03	Csoil	NO	DLBSL
	108-88-3	Toluene	4.2E-03 J	5.3E-02	MG/KG	IR86-SS107-0-0_5-09D	2/23	0.0041 - 0.021	5.3E-02	N/A	5.0E+02 NS	5.5E+00	Csoil	NO	BSL

TABLE H 2.9

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.5E+01 N	5.1E-01	Csoil	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	2.8E+00 C	1.8E-02	Csoil	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	7.9E+01 N	2.4E+01	Csoil	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.0E-02 C	1.9E-04	Csoil	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	MG/KG		0/23	0.0041 - 0.021	2.1E-02	N/A	6.3E+01 NS	6.0E+00	Csoil	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/18	0.27 - 0.4	4.0E-01	N/A	2.1E+02 NS	4.3E+01	Csoil	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	4.6E+00 C	1.3E-03	Csoil	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/23	0.27 - 1	1.0E+00	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	**2,4-Dimethylphenol**	**ND**	**ND**	**MG/KG**		**0/23**	**0.27 - 0.4**	**4.0E-01**	**N/A**	**1.2E+02 N**	**1.4E+00**	**Csoil**	**NO**	**DLBSL**
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/22	0.37 - 1	1.0E+00	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.9E+01 N	4.1E-03	Csoil	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.1E+01 N	1.6E+00	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/23	0.27 - 1	1.0E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/23	0.27 - 1	1.0E+00	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/22	0.43 - 1	1.0E+00	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	**4-Methylphenol**	**ND**	**ND**	**MG/KG**		**0/23**	**0.073 - 0.4**	**4.0E-01**	**N/A**	**3.1E+01 N**	**4.0E-01**	**Csoil**	**NO**	**DLBSL**
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/23	0.27 - 1	1.0E+00	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/23	0.33 - 1	1.0E+00	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	7.9E-02	7.9E-02	MG/KG	IR86-SS104-0-0_5-09D	1/23	0.0036 - 0.4	7.9E-02	N/A	3.4E+02 N	8.4E+00	Csoil	NO	BSL
	208-96-8	Acenaphthylene	2.2E-03 J	2.2E-03 J	MG/KG	IR86-SS104-0-0_5-09D	1/23	0.0036 - 0.4	2.2E-03	N/A	3.4E+02 N	1.1E+01	Csoil	NO	BSL
	98-86-2	Acetophenone	8.7E-02 J	8.7E-02 J	MG/KG	IR86-SS02-07D	1/19	0.27 - 0.4	8.7E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	120-12-7	Anthracene	9.2E-04 J	1.4E-01	MG/KG	IR86-SS104-0-0_5-09D	4/23	0.0036 - 0.4	1.4E-01	N/A	1.7E+03 N	6.6E+02	Csoil	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	2.1E+00 C	2.5E-02	Csoil	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	7.8E+02 NS	N/A	N/A	NO	DLBSL
	56-55-3	**Benzo(a)anthracene**	**5.7E-03 J**	**2.6E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/23**	**0.0036 - 0.4**	**2.6E-01**	**N/A**	**1.5E-01 C**	**1.8E-01**	**Csoil**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	**5.7E-03 J**	**2.2E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/23**	**0.0036 - 0.4**	**2.2E-01**	**N/A**	**1.5E-02 C**	**5.9E-02**	**Csoil**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**8.1E-03 J**	**2.9E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**8/23**	**0.0036 - 0.4**	**2.9E-01**	**N/A**	**1.5E-01 C**	**6.0E-01**	**Csoil**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	5.3E-03 J	1.9E-01	MG/KG	IR86-SS104-0-0_5-09D	5/23	0.0036 - 0.4	1.9E-01	N/A	1.7E+02 N	3.6E+02	Csoil	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**2.6E-03 J**	**1.9E-01 J**	**MG/KG**	**IR86-SS06-07D : IR86-SS07-07D**	**7/23**	**0.0036 - 0.4**	**1.9E-01**	**N/A**	**1.5E+00 C**	**5.9E+00**	**Csoil**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL

TABLE H 2.9

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/23	0.036 - 0.4	4.0E-01	N/A	2.1E-01 C	1.4E-04	Csoil	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	8.3E-02 J	2.9E-01 J	MG/KG	IR86-SS04-07D	4/23	0.27 - 0.4	2.9E-01	N/A	3.5E+01 C*	7.2E+00	Csoil	NO	BSL
	85-68-7	Butylbenzylphthalate	9.9E-02 J	2.4E-01 J	MG/KG	IR86-SS04-07D : IR86-SS06-07D	3/23	0.27 - 0.4	2.4E-01	N/A	2.6E+02 C*	1.5E+02	Csoil	NO	BSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.1E+03 N	1.8E+01	Csoil	NO	DLBSL
	86-74-8	Carbazole	2.9E-02 J	2.9E-02 J	MG/KG	IR86-SS104-0-0_5-09D	1/23	0.27 - 0.4	2.9E-02	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**6.0E-03 J**	**2.6E-01 J**	**MG/KG**	**IR86-SS07-07D**	**7/23**	**0.0036 - 0.4**	**2.6E-01**	**N/A**	**1.5E+01 C**	**1.8E+01**	**Csoil**	**YES**	**CPAH**
	53-70-3	Dibenz(a,h)anthracene	ND	ND	MG/KG		0/23	0.0036 - 0.4	4.0E-01	N/A	1.5E-02 C	1.9E-01	Csoil	YES	DLASL
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	7.8E+00 N	4.7E+00	Csoil	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	4.9E+03 N	3.7E+01	Csoil	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	8.0E-02 J	2.4E-01 J	MG/KG	IR86-SS06-07D	2/23	0.27 - 0.4	2.4E-01	N/A	6.1E+02 N	1.9E+01	Csoil	NO	BSL
	117-84-0	**Di-n-octylphthalate**	**ND**	**ND**	**MG/KG**		**0/23**	**0.27 - 0.4**	**4.0E-01**	**N/A**	**N/A**	**3.8E+01**	**Csoil**	**NO**	**NTX**
	206-44-0	Fluoranthene	2.1E-03 J	5.4E-01	MG/KG	IR86-SS104-0-0_5-09D	9/23	0.0036 - 0.4	5.4E-01	N/A	2.3E+02 N	3.3E+02	Csoil	NO	BSL
	86-73-7	Fluorene	6.0E-02	6.0E-02	MG/KG	IR86-SS104-0-0_5-09D	1/23	0.0036 - 0.4	6.0E-02	N/A	2.3E+02 N	5.6E+01	Csoil	NO	BSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	3.0E-01 C	2.6E-03	Csoil	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.2E+00 C**	8.7E-03	Csoil	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/22	0.28 - 0.4	4.0E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.4E-03 J**	**1.7E-01**	**MG/KG**	**IR86-SS104-0-0_5-09D**	**7/23**	**0.0036 - 0.4**	**1.7E-01**	**N/A**	**1.5E-01 C**	**2.0E+00**	**Csoil**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	MG/KG		0/23	0.2 - 0.4	4.0E-01	N/A	5.1E+02 C*	2.1E-01	Csoil	NO	DLBSL
	91-20-3	Naphthalene	1.2E-02	1.2E-02	MG/KG	IR86-SS104-0-0_5-09D	1/23	0.0036 - 0.4	1.2E-02	N/A	3.6E+00 C*	2.1E-01	Csoil	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/22	0.47 - 1	1.0E+00	N/A	8.9E-01 C	3.1E-02	Csoil	YES	DLASL
	85-01-8	Phenanthrene	4.3E-03 J	3.6E-01	MG/KG	IR86-SS104-0-0_5-09D	7/23	0.0036 - 0.4	3.6E-01	N/A	1.7E+03 N	5.7E+01	Csoil	NO	BSL
	108-95-2	Phenol	ND	ND	MG/KG		0/23	0.27 - 0.4	4.0E-01	N/A	1.8E+03 N	2.3E-01	Csoil	NO	DLBSL
	129-00-0	Pyrene	1.7E-03 J	4.3E-01	MG/KG	IR86-SS104-0-0_5-09D	9/23	0.0036 - 0.4	4.3E-01	N/A	1.7E+02 N	2.2E+02	Csoil	NO	BSL
	72-54-8	4,4'-DDD	9.4E-04 J	1.4E-02 J	MG/KG	IR86-SS105-0-0_5-09D	7/23	0.0036 - 0.0042	1.4E-02	N/A	2.0E+00 C	2.4E-01	Csoil	NO	BSL
	72-55-9	4,4'-DDE	8.9E-04 J	1.8E-02 J	MG/KG	IR86-SS06-07D	14/23	0.0036 - 0.0042	1.8E-02	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	1.2E-03 J	9.0E-03	MG/KG	IR86-SS06-07D	12/23	0.0036 - 0.0042	9.0E-03	N/A	1.7E+00 C*	3.4E-01	Csoil	NO	BSL
	309-00-2	Aldrin	ND	ND	MG/KG		0/23	0.0018 - 0.0022	2.2E-03	N/A	2.9E-02 C*	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/23	0.0018 - 0.0022	2.2E-03	N/A	7.7E-02 C	1.2E-03	Csoil	NO	DLBSL
	5103-71-9	alpha-Chlordane	7.4E-04 J	3.0E-02	MG/KG	IR86-SS105-0-0_5-09D	7/23	0.0018 - 0.0022	3.0E-02	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/23	0.073 - 0.086	8.6E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	1.1E-01 C**	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/23	0.036 - 0.042	4.2E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	2.8E-02	2.8E-02	MG/KG	IR86-SS105-0-0_5-09D	1/23	0.0018 - 0.0022	2.8E-02	N/A	2.7E-01 C	1.2E-03	Csoil	NO	BSL
	319-86-8	delta-BHC	4.3E-04 J	1.1E-03 J	MG/KG	IR86-SS02-07D	2/23	0.0018 - 0.0022	1.1E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	BSL

TABLE H 2.9

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	60-57-1	Dieldrin	5.7E-04 J	5.7E-03 J	MG/KG	IR86-SS104-0-0_5-09D	5/23	0.0036 - 0.0042	5.7E-03	N/A	3.0E-02 C	8.1E-04	Csoil	NO	BSL
	959-98-8	Endosulfan I	3.4E-02 J	3.4E-02 J	MG/KG	IR86-SS105-0-0_5-09D	1/23	0.0018 - 0.0022	3.4E-02	N/A	3.7E+01 N	5.6E+00	Csoil	NO	BSL
	33213-65-9	Endosulfan II	4.1E-04 J	5.0E-03	MG/KG	IR86-SS01-07D	9/23	0.0036 - 0.0042	5.0E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	1031-07-8	Endosulfan sulfate	2.7E-03 J	2.7E-03 J	MG/KG	IR86-SS105-0-0_5-09D	1/23	0.0036 - 0.0042	2.7E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	72-20-8	Endrin	1.2E-03 J	1.2E-03 J	MG/KG	IR86-SS01-07D	1/23	0.0036 - 0.0042	1.2E-03	N/A	1.8E+00 N	8.1E-01	Csoil	NO	BSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/23	0.0036 - 0.0042	4.2E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	MG/KG		0/23	0.0036 - 0.0042	4.2E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	7.9E-04 J	7.9E-04 J	MG/KG	IR86-SS04-07D	1/23	0.0018 - 0.0022	7.9E-04	N/A	5.2E-01 C*	1.8E-03	Csoil	NO	BSL
	5103-74-2	gamma-Chlordane	4.5E-04 J	3.0E-02 J	MG/KG	IR86-SS105-0-0_5-09D	11/23	0.0018 - 0.0022	3.0E-02	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/23	0.0018 - 0.0022	2.2E-03	N/A	1.1E-01 C	6.6E-03	Csoil	NO	DLBSL
	1024-57-3	Heptachlor epoxide	2.4E-03	2.4E-03	MG/KG	IR86-SS105-0-0_5-09D	1/23	0.0018 - 0.0022	2.4E-03	N/A	5.3E-02 C*	8.2E-04	Csoil	NO	BSL
	72-43-5	**Methoxychlor**	**9.5E-03 J**	**9.5E-03 J**	**MG/KG**	**IR86-SS106-0-0_5-09D**	**1/23**	**0.018 - 0.022**	**9.5E-03**	**N/A**	**3.1E+01 N**	**2.2E+01**	**Csoil**	**NO**	**BSL**
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/23	0.033 - 0.2	2.0E-01	N/A	4.4E-01 C	4.6E-02	Csoil	NO	DLBSL
	7429-90-5	**Aluminum**	**1.1E+03**	**3.8E+04 J**	**MG/KG**	**IR86-SB106-07-08-09D**	**23/23**	**11 - 25**	**3.8E+04**	**5.5E+03**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	2.3E-01 J	3.0E-01 J	MG/KG	IR86-SS106-0-0_5-09D	3/23	0.55 - 7.2	3.0E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	BSL
	7440-38-2	**Arsenic**	**4.7E-01 J**	**3.2E+00**	**MG/KG**	**IR86-SS100-09D**	**20/23**	**0.55 - 1.3**	**3.2E+00**	**6.3E-01**	**3.9E-01 C***	**5.8E+00**	**Csoil**	**YES**	**ASL**
	7440-39-3	Barium	8.3E+00	4.4E+01	MG/KG	IR86-SB106-07-08-09D	23/23	1.4 - 23.9	4.4E+01	1.4E+01	1.5E+03 N	5.8E+02	Csoil	NO	BSL
	7440-41-7	Beryllium	3.6E-02 J	4.2E-01	MG/KG	IR86-SB106-07-08-09D	9/23	0.22 - 0.6	4.2E-01	1.0E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	2.5E-02 J	1.6E+00	MG/KG	IR86-SS04-07D	18/23	0.11 - 0.6	1.6E+00	2.3E-02	7.0E+00 N	3.0E+00	N/A	NO	BSL
	7440-70-2	Calcium	5.0E+01 J	3.7E+04	MG/KG	IR86-SS109-09D	23/23	280 - 599	3.7E+04	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.4E+00**	**4.1E+01**	**MG/KG**	**IR86-SB106-07-08-09D**	**23/23**	**0.28 - 1.2**	**4.1E+01**	**6.1E+00**	**2.9E-01 C**	**3.8E+00**	**Csoil**	**YES**	**ASL**
	7440-48-4	**Cobalt**	**5.6E-01 J**	**2.5E+00**	**MG/KG**	**IR86-SS100-09D**	**13/23**	**1.4 - 6**	**2.5E+00**	**2.9E-01**	**2.3E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	1.5E-01 J	8.3E+00 J	MG/KG	IR86-SS09-07D	23/23	0.28 - 3	8.3E+00	2.6E+00	3.1E+02 N	7.0E+02	Csoil	NO	BSL
	57-12-5	Cyanide	1.9E-01 J	5.0E-01 J	MG/KG	IR86-SS10-07D	8/10	2.7 - 3	5.0E-01	NA	1.6E+02 N	2.8E-01	Csoil	NO	BSL
	7439-89-6	**Iron**	**5.0E+02 J**	**8.3E+03 J**	**MG/KG**	**IR86-SB106-07-08-09D**	**23/23**	**5.5 - 12**	**8.3E+03**	**3.2E+03**	**5.5E+03 N**	**1.5E+02**	**Csoil**	**YES**	**ASL**
	7439-92-1	Lead	1.9E-01 J	1.0E+02 J	MG/KG	IR86-SS07-07D	23/23	0.55 - 1.3	1.0E+02	8.5E+00	4.0E+02 NL	2.7E+02	Csoil	NO	BSL
	7439-95-4	Magnesium	6.7E+01 J	1.6E+03	MG/KG	IR86-SB106-07-08-09D	23/23	280 - 599	1.6E+03	2.4E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.5E+00 J	4.3E+01 J	MG/KG	IR86-SS107-0-0_5-09D	23/23	0.83 - 1.8	4.3E+01	9.2E+00	1.8E+02 N	6.5E+01	Csoil	NO	BSL
	7439-97-6	Mercury	1.9E-02 J	7.6E-02 J	MG/KG	IR86-SS07-07D	5/23	0.091 - 0.12	7.6E-02	7.1E-02	2.3E+00 N	1.0E+00	Csoil	NO	BSL
	7440-02-0	Nickel	7.1E-01 J	8.1E+00	MG/KG	IR86-SB106-07-08-09D	23/23	2.2 - 4.8	8.1E+00	1.2E+00	1.5E+02 N	1.3E+02	Csoil	NO	BSL
	7440-09-7	Potassium	3.5E+01 J	2.2E+03	MG/KG	IR86-SB106-07-08-09D	23/23	280 - 599	2.2E+03	1.2E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.5E-01 J	1.1E+00	MG/KG	IR86-SS100-09D	12/23	0.55 - 4.2	1.1E+00	5.0E-01	3.9E+01 N	2.1E+00	Csoil	NO	BSL
	7440-22-4	Silver	2.7E-01 J	2.7E-01 J	MG/KG	IR86-SS109-09D	1/23	0.28 - 1.2	2.7E-01	1.3E-01	3.9E+01 N	3.4E+00	Csoil	NO	BSL
	7440-23-5	Sodium	2.0E+01 J	3.4E+02	MG/KG	IR86-SS107-0-0_5-09D	11/23	280 - 599	3.4E+02	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	3.5E-01 J	5.3E-01 J	MG/KG	IR86-SS100-09D	5/23	2.6 - 6.3	5.3E-01	3.6E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	4.7E+00 J	3.7E+01	MG/KG	IR86-SB106-07-08-09D	23/23	2.8 - 6	3.7E+01	8.9E+00	3.9E+01 N	N/A	N/A	NO	BSL
	7440-66-6	Zinc	3.6E+00	6.8E+01	MG/KG	IR86-SS04-07D	23/23	2.8 - 7.2	6.8E+01	6.6E+00	2.3E+03 N	1.2E+03	Csoil	NO	BSL

TABLE H 2.9

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

* Surface soil & subsurface soil combined

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values are two times the arithmetic mean basewide background surface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.
RSL value for n-hexane used as surrogate for methylcyclohexane.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for chromium VI used as surrogate for chromium.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for vanadium based on vanadium and compounds.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)
	Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.
C = Carcinogenic
N = Noncarcinogenic
C* − N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic
S = concentration exceeds Csat, used Csat as screening value
C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached
Csoil = Federal Remediation Branch Target Screening Values, calculated source concen for soil which is protective of groundwater, January 2010

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/D

TABLE H 2.10

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Emissions from Soil*in Industrial Area	71-55-6	1,1,1-Trichloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	1.0E-02	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	1.1E-03	N/A	4.2E-02 C	N/A	N/A	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	µg/m^3		0/23	N/A - N/A	1.4E-02	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	2.4E-03	N/A	1.5E-01 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	8.3E-03	N/A	1.5E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	µg/m^3		0/23	N/A - N/A	1.5E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	5.8E-04	N/A	2.1E-01 N	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	µg/m^3		0/23	N/A - N/A	5.4E-04	N/A	1.6E-04 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	µg/m^3		0/23	N/A - N/A	2.0E-03	N/A	4.1E-03 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	1.5E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	3.8E-03	N/A	9.4E-02 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	µg/m^3		0/23	N/A - N/A	4.9E-03	N/A	2.4E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	1.7E-03	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	1.7E-03	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	ND	ND	µg/m^3		0/21	N/A - N/A	2.1E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	µg/m^3		0/23	N/A - N/A	1.9E-03	N/A	3.1E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	µg/m^3		0/23	N/A - N/A	2.4E-03	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	3.0E-04 J	1.5E-03 J	µg/m^3	IR86-SB104-08-09-09D	3/23	N/A - N/A	1.5E-03	N/A	3.2E+03 N	N/A	N/A	NO	BSL
	71-43-2	Benzene	ND	ND	µg/m^3		0/23	N/A - N/A	4.9E-03	N/A	3.1E-01 C	N/A	N/A	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	µg/m^3		0/23	N/A - N/A	4.3E-03	N/A	6.6E-02 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	µg/m^3		0/23	N/A - N/A	1.3E-03	N/A	2.2E+00 C	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	µg/m^3		0/23	N/A - N/A	1.8E-02	N/A	5.2E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	µg/m^3		0/23	N/A - N/A	1.5E-02	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	µg/m^3		0/23	N/A - N/A	1.1E-02	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	2.7E-03	N/A	5.2E+00 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	1.3E-02	N/A	1.0E+03 N	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	µg/m^3		0/23	N/A - N/A	6.6E-03	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	µg/m^3		0/23	N/A - N/A	1.4E-02	N/A	9.4E+00 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	µg/m^3		0/23	N/A - N/A	6.9E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	µg/m^3		0/23	N/A - N/A	5.1E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	µg/m^3		0/23	N/A - N/A	1.6E-02	N/A	6.3E+02 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	µg/m^3		0/23	N/A - N/A	8.4E-04	N/A	9.0E-02 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	µg/m^3		0/23	N/A - N/A	2.1E-02	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	µg/m^3		0/23	N/A - N/A	3.0E-03	N/A	9.7E-01 C	N/A	N/A	NO	DLBSL
	98-82-8	Isopropylbenzene	ND	ND	µg/m^3		0/23	N/A - N/A	2.8E-03	N/A	4.2E+01 N	N/A	N/A	NO	DLBSL
	79-20-9	Methyl acetate	ND	ND	µg/m^3		0/23	N/A - N/A	2.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	108-87-2	Methylcyclohexane	3.2E-03 J	3.2E-03 J	µg/m^3	IR86-SS107-0-0_5-09D	1/23	N/A - N/A	3.2E-03	N/A	7.3E+01 N	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	µg/m^3		0/23	N/A - N/A	7.8E-03	N/A	5.2E+00 C	N/A	N/A	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	µg/m^3		0/23	N/A - N/A	3.5E-03	N/A	9.4E+00 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	µg/m^3		0/23	N/A - N/A	1.8E-03	N/A	1.0E+02 N	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	µg/m^3		0/23	N/A - N/A	7.3E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	8.0E-04 J	1.0E-02	µg/m^3	IR86-SS107-0-0_5-09D	2/23	N/A - N/A	1.0E-02	N/A	5.2E+02 N	N/A	N/A	NO	BSL

TABLE H 2.10

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	156-60-5	trans-1,2-Dichloroethene	ND	ND	µg/m^3		0/23	N/A - N/A	6.9E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	µg/m^3		0/23	N/A - N/A	5.1E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	µg/m^3		0/23	N/A - N/A	7.8E-03	N/A	1.2E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	µg/m^3		0/23	N/A - N/A	1.7E-02	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	µg/m^3		0/23	N/A - N/A	1.8E-02	N/A	1.6E-01 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-03	N/A	1.0E+01 N	N/A	N/A	NO	DLBSL
	92-52-4	1,1-Biphenyl	ND	ND	µg/m^3		0/18	N/A - N/A	2.9E-03	N/A	N/A	N/A	N/A	NO	NTX
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	µg/m^3		0/23	N/A - N/A	9.3E-03	N/A	2.4E-01 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	µg/m^3		0/23	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	88-06-2	2,4,6-Trichlorophenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	7.8E-01 C	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-67-9	**2,4-Dimethylphenol**	**ND**	**ND**	**µg/m^3**		**0/23**	**N/A - N/A**	**2.9E-07**	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**NTX**
	51-28-5	2,4-Dinitrophenol	ND	ND	µg/m^3		0/22	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	121-14-2	2,4-Dinitrotoluene	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	2.7E-02 C	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	91-58-7	2-Chloronaphthalene	ND	ND	µg/m^3		0/23	N/A - N/A	4.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-57-8	2-Chlorophenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-57-6	2-Methylnaphthalene	ND	ND	µg/m^3		0/23	N/A - N/A	5.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-48-7	2-Methylphenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	µg/m^3		0/23	N/A - N/A	7.4E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	7.2E-03 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	µg/m^3		0/23	N/A - N/A	7.4E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	µg/m^3		0/22	N/A - N/A	7.4E-07	N/A	N/A	N/A	N/A	NO	NTX
	101-55-3	4-Bromophenyl-phenylether	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	µg/m^3		0/23	N/A - N/A	1.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	106-47-8	4-Chloroaniline	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	106-44-5	**4-Methylphenol**	**ND**	**ND**	**µg/m^3**		**0/23**	**N/A - N/A**	**2.9E-07**	**N/A**	**6.3E+01 N**	**N/A**	**N/A**	**NO**	**DLBSL**
	100-01-6	4-Nitroaniline	ND	ND	µg/m^3		0/23	N/A - N/A	7.4E-07	N/A	6.3E-01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	µg/m^3		0/23	N/A - N/A	1.1E-02	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	4.6E-04	4.6E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/23	N/A - N/A	4.6E-04	N/A	N/A	N/A	N/A	NO	NTX
	208-96-8	Acenaphthylene	1.3E-05 J	1.3E-05 J	µg/m^3	IR86-SS104-0-0_5-09D	1/23	N/A - N/A	1.3E-05	N/A	N/A	N/A	N/A	NO	NTX
	98-86-2	Acetophenone	1.2E-03 J	1.2E-03 J	µg/m^3	IR86-SS02-07D	1/19	N/A - N/A	1.2E-03	N/A	N/A	N/A	N/A	NO	NTX
	120-12-7	Anthracene	1.4E-06 J	2.2E-04	µg/m^3	IR86-SS104-0-0_5-09D	4/23	N/A - N/A	2.2E-04	N/A	N/A	N/A	N/A	NO	NTX
	1912-24-9	Atrazine	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	100-52-7	Benzaldehyde	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	56-55-3	Benzo(a)anthracene	4.2E-09 J	1.9E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/23	N/A - N/A	1.9E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	50-32-8	Benzo(a)pyrene	4.2E-09 J	1.6E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/23	N/A - N/A	1.6E-07	N/A	8.7E-04 C	N/A	N/A	NO	BSL
	205-99-2	Benzo(b)fluoranthene	6.0E-09 J	2.1E-07	µg/m^3	IR86-SS104-0-0_5-09D	8/23	N/A - N/A	2.1E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	1.8E-06 J	6.6E-05	µg/m^3	IR86-SS104-0-0_5-09D	5/23	N/A - N/A	6.6E-05	N/A	N/A	N/A	N/A	NO	NTX
	207-08-9	Benzo(k)fluoranthene	1.9E-09 J	1.4E-07 J	µg/m^3	IR86-SS06-07D : IR86-SS07-07D	7/23	N/A - N/A	1.4E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.10

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	µg/m^3		0/23	N/A - N/A	7.8E-03	N/A	7.4E-03 C	N/A	N/A	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	6.1E-08 J	1.7E-07 J	µg/m^3	IR86-SS04-07D	4/23	N/A - N/A	1.7E-07	N/A	1.0E+00 C	N/A	N/A	NO	BSL
	85-68-7	Butylbenzylphthalate	7.3E-08 J	1.8E-07 J	µg/m^3	IR86-SS04-07D : IR86-SS06-07D	3/23	N/A - N/A	1.8E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-60-2	Caprolactam	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-74-8	Carbazole	1.4E-04 J	1.4E-04 J	µg/m^3	IR86-SS104-0-0_5-09D	1/23	N/A - N/A	1.4E-04	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	4.4E-09 J	1.9E-07 J	µg/m^3	IR86-SS07-07D	7/23	N/A - N/A	1.9E-07	N/A	8.7E-02 C	N/A	N/A	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	8.0E-04 C	N/A	N/A	NO	DLBSL
	132-64-9	Dibenzofuran	ND	ND	µg/m^3		0/23	N/A - N/A	3.9E-02	N/A	N/A	N/A	N/A	NO	NTX
	84-66-2	Diethylphthalate	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	131-11-3	Dimethyl phthalate	ND	ND	µg/m^3		0/23	N/A - N/A	1.8E-03	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	5.9E-08 J	1.8E-07 J	µg/m^3	IR86-SS06-07D	2/23	N/A - N/A	1.8E-07	N/A	N/A	N/A	N/A	NO	NTX
	117-84-0	**Di-n-octylphthalate**	**ND**	**ND**	**µg/m^3**		**0/23**	**N/A - N/A**	**2.9E-07**	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**NTX**
	206-44-0	Fluoranthene	1.5E-09 J	4.0E-07	µg/m^3	IR86-SS104-0-0_5-09D	9/23	N/A - N/A	4.0E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	1.7E-04	1.7E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/23	N/A - N/A	1.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	118-74-1	Hexachlorobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	5.3E-03 C	N/A	N/A	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	µg/m^3		0/22	N/A - N/A	2.9E-07	N/A	2.1E-02 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	3.2E-09 J	1.3E-07	µg/m^3	IR86-SS104-0-0_5-09D	7/23	N/A - N/A	1.3E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	78-59-1	Isophorone	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	2.1E+02 N	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	2.1E-04	2.1E-04	µg/m^3	IR86-SS104-0-0_5-09D	1/23	N/A - N/A	2.1E-04	N/A	7.2E-02 C*	N/A	N/A	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	1.2E-03 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	9.4E-01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	µg/m^3		0/23	N/A - N/A	4.5E-03	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	µg/m^3		0/22	N/A - N/A	7.4E-07	N/A	4.8E-01 C	N/A	N/A	NO	DLBSL
	85-01-8	Phenanthrene	6.8E-06 J	5.7E-04	µg/m^3	IR86-SS104-0-0_5-09D	7/23	N/A - N/A	5.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	108-95-2	Phenol	ND	ND	µg/m^3		0/23	N/A - N/A	2.9E-07	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	5.9E-07 J	1.5E-04	µg/m^3	IR86-SS104-0-0_5-09D	9/23	N/A - N/A	1.5E-04	N/A	N/A	N/A	N/A	NO	NTX
	72-54-8	**4,4'-DDD**	**6.9E-10 J**	**1.0E-08 J**	**µg/m^3**	**IR86-SS105-0-0_5-09D**	**7/23**	**N/A - N/A**	**1.0E-08**	**N/A**	**3.5E-02 C**	**N/A**	**N/A**	**NO**	**BSL**
	72-55-9	4,4'-DDE	6.5E-10 J	1.3E-08 J	µg/m^3	IR86-SS06-07D	14/23	N/A - N/A	1.3E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	8.8E-10 J	6.6E-09	µg/m^3	IR86-SS06-07D	12/23	N/A - N/A	9.0E-03	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	309-00-2	Aldrin	ND	ND	µg/m^3		0/23	N/A - N/A	1.6E-09	N/A	5.0E-04 C	N/A	N/A	NO	DLBSL
	319-84-6	alpha-BHC	ND	ND	µg/m^3		0/23	N/A - N/A	1.6E-09	N/A	1.4E-03 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	5.4E-10 J	2.2E-08	µg/m^3	IR86-SS105-0-0_5-09D	7/23	N/A - N/A	2.2E-08	N/A	2.4E-02 C*	N/A	N/A	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-08	N/A	1.2E-01 C	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	µg/m^3		0/23	N/A - N/A	8.3E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	µg/m^3		0/23	N/A - N/A	4.0E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	2.1E-08	2.1E-08	µg/m^3	IR86-SS105-0-0_5-09D	1/23	N/A - N/A	2.1E-08	N/A	4.6E-03 C	N/A	N/A	NO	BSL
	319-86-8	delta-BHC	3.2E-10 J	8.1E-10 J	µg/m^3	IR86-SS02-07D	2/23	N/A - N/A	8.1E-10	N/A	4.8E-03 C	N/A	N/A	NO	BSL

TABLE H 2.10

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	60-57-1	Dieldrin	4.2E-10 J	4.2E-09 J	µg/m^3	IR86-SS104-0-0_5-09D	5/23	N/A - N/A	4.2E-09	N/A	5.3E-04 C	N/A	N/A	NO	BSL
	959-98-8	Endosulfan I	2.5E-08 J	2.5E-08 J	µg/m^3	IR86-SS105-0-0_5-09D	1/23	N/A - N/A	2.5E-08	N/A	N/A	N/A	N/A	NO	NTX
	33213-65-9	Endosulfan II	3.0E-10 J	3.7E-09	µg/m^3	IR86-SS01-07D	9/23	N/A - N/A	3.7E-09	N/A	N/A	N/A	N/A	NO	NTX
	1031-07-8	Endosulfan sulfate	2.0E-09 J	2.0E-09 J	µg/m^3	IR86-SS105-0-0_5-09D	1/23	N/A - N/A	2.0E-09	N/A	N/A	N/A	N/A	NO	NTX
	72-20-8	Endrin	8.8E-10 J	8.8E-10 J	µg/m^3	IR86-SS01-07D	1/23	N/A - N/A	8.8E-10	N/A	N/A	N/A	N/A	NO	NTX
	7421-93-4	Endrin aldehyde	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-09	N/A	N/A	N/A	N/A	NO	NTX
	53494-70-5	Endrin ketone	ND	ND	µg/m^3		0/23	N/A - N/A	3.1E-09	N/A	N/A	N/A	N/A	NO	NTX
	58-89-9	gamma-BHC (Lindane)	5.8E-10 J	5.8E-10 J	µg/m^3	IR86-SS04-07D	1/23	N/A - N/A	5.8E-10	N/A	7.8E-03 C	N/A	N/A	NO	BSL
	5103-74-2	gamma-Chlordane	3.3E-10 J	2.2E-08 J	µg/m^3	IR86-SS105-0-0_5-09D	11/23	N/A - N/A	2.2E-08	N/A	2.4E-02 C	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND	ND	µg/m^3		0/23	N/A - N/A	1.6E-09	N/A	1.9E-03 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	1.8E-09	1.8E-09	µg/m^3	IR86-SS105-0-0_5-09D	1/23	N/A - N/A	1.8E-09	N/A	9.4E-04 C	N/A	N/A	NO	BSL
	72-43-5	**Methoxychlor**	**7.0E-09 J**	**7.0E-09 J**	**µg/m^3**	**IR86-SS106-0-0_5-09D**	**1/23**	**N/A - N/A**	**7.0E-09**	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**NTX**
	8001-35-2	Toxaphene	ND	ND	µg/m^3		0/23	N/A - N/A	1.5E-07	N/A	7.6E-03 C	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	8.3E-04	2.8E-02 J	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	2.8E-02	N/A	5.2E-01 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	1.7E-07 J	2.2E-07 J	µg/m^3	IR86-SS106-0-0_5-09D	3/23	N/A - N/A	2.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-38-2	Arsenic	3.5E-07 J	2.4E-06	µg/m^3	IR86-SS100-09D	20/23	N/A - N/A	2.4E-06	N/A	5.7E-04 C*	N/A	N/A	NO	BSL
	7440-39-3	Barium	6.1E-06	3.2E-05	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	3.2E-05	N/A	5.2E-02 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	2.6E-08 J	3.1E-07	µg/m^3	IR86-SB106-07-08-09D	9/23	N/A - N/A	3.1E-07	N/A	1.0E-03 C*	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	1.8E-08 J	1.2E-06	µg/m^3	IR86-SS04-07D	18/23	N/A - N/A	1.2E-06	N/A	1.0E-03 C**	N/A	N/A	NO	BSL
	7440-70-2	Calcium	3.7E-05 J	2.7E-02	µg/m^3	IR86-SS109-09D	23/23	N/A - N/A	2.7E-02	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**1.0E-06**	3.0E-05	µg/m^3	**IR86-SB106-07-08-09D**	**23/23**	**N/A - N/A**	**3.0E-05**	**N/A**	**1.1E-05 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	Cobalt	4.1E-07 J	1.8E-06	µg/m^3	IR86-SS100-09D	13/23	N/A - N/A	1.8E-06	N/A	2.7E-04 C*	N/A	N/A	NO	BSL
	7440-50-8	Copper	1.1E-07 J	6.1E-06 J	µg/m^3	IR86-SS09-07D	23/23	N/A - N/A	6.1E-06	N/A	N/A	N/A	N/A	NO	NTX
	57-12-5	Cyanide	1.4E-07 J	3.7E-07 J	µg/m^3	IR86-SS10-07D	8/10	N/A - N/A	3.7E-07	NA	N/A	N/A	N/A	NO	NTX
	7439-89-6	Iron	3.7E-04 J	6.1E-03 J	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	6.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	7439-92-1	Lead	1.4E-07 J	7.3E-05 J	µg/m^3	IR86-SS07-07D	23/23	N/A - N/A	7.3E-05	N/A	N/A	N/A	N/A	NO	NTX
	7439-95-4	Magnesium	5.0E-05 J	1.2E-03	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	1.2E-03	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.1E-06 J	3.2E-05 J	µg/m^3	IR86-SS107-0-0_5-09D	23/23	N/A - N/A	3.2E-05	N/A	5.2E-03 N	N/A	N/A	NO	BSL
	7439-97-6	**Mercury**	**1.4E-08 J**	**5.6E-08 J**	**µg/m^3**	**IR86-SS07-07D**	**5/23**	**N/A - N/A**	**5.6E-08**	**N/A**	**3.1E-02 N**	**N/A**	**N/A**	**NO**	**BSL**
	7440-02-0	Nickel	5.2E-07 J	6.0E-06	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	6.0E-06	N/A	9.4E-03 C*	N/A	N/A	NO	BSL
	7440-09-7	Potassium	2.6E-05 J	1.6E-03	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	1.6E-03	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.8E-07 J	8.1E-07	µg/m^3	IR86-SS100-09D	12/23	N/A - N/A	8.1E-07	N/A	2.1E+00 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	2.0E-07 J	2.0E-07 J	µg/m^3	IR86-SS109-09D	1/23	N/A - N/A	2.0E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-23-5	Sodium	1.5E-05 J	2.5E-04	µg/m^3	IR86-SS107-0-0_5-09D	11/23	N/A - N/A	2.5E-04	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	2.6E-07 J	3.9E-07 J	µg/m^3	IR86-SS100-09D	5/23	N/A - N/A	3.9E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	3.5E-06 J	2.7E-05	µg/m^3	IR86-SB106-07-08-09D	23/23	N/A - N/A	2.7E-05	N/A	N/A	N/A	N/A	NO	NTX
	7440-66-6	Zinc	2.6E-06	5.0E-05	µg/m^3	IR86-SS04-07D	23/23	N/A - N/A	5.0E-05	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.10

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

* Surface soil & subsurface soil combined

[1] Minimum/Maximum calculated air concentrations from surface soil concentrations. Air concentrations calculated as $C_{air} = C_{soil}*1000*(1/PEF + 1/VF)$.
PEF = 1.36E+09 m^3/kg. VF calculated for volatile constituents only, on Table 2.2A and 2.4A. PEF and VF from USEPA's Soil Screening Guidance. (USEPA, July 1996)

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online].
Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N = Noncarcinogenic
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/[

TABLE H 2.11

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Soil* from Flight Line Area	71-55-6	1,1,1-Trichloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.4E+02 NS	1.2E+00	Csoil	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	5.6E-01 C	1.2E-03	Csoil	NO	DLBSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	9.1E+02 NS	9.2E+03	Csoil	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	3.3E+00 C	3.0E-02	Csoil	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.4E+01 N	4.6E-02	Csoil	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.2E+00 C**	2.2E+00	Csoil	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	5.4E-03 C	2.5E-04	Csoil	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	3.4E-02 C	9.7E-05	Csoil	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.9E+02 NS	2.4E-01	Csoil	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	4.3E-01 C	2.0E-03	Csoil	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	8.9E-01 C*	3.3E-03	Csoil	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.4E+00 C	7.6E+00	Csoil	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.4E+00 C	7.0E-02	Csoil	NO	DLBSL
	78-93-3	2-Butanone	1.5E-02 J	2.0E-02 J	MG/KG	IR86-SS111-0-0_5-09D	2/17	0.0084 - 0.018	2.0E-02	N/A	2.8E+03 N	1.6E+01	Csoil	NO	BSL
	591-78-6	2-Hexanone	ND	ND	MG/KG		0/18	0.0084 - 0.018	1.8E-02	N/A	2.1E+01 N	1.2E+00	Csoil	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	MG/KG		0/18	0.0084 - 0.018	1.8E-02	N/A	5.3E+02 NS	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	2.5E-03 J	2.3E-01 J	MG/KG	IR86-SS113-0-0_5-09D	10/18	0.017 - 0.036	2.3E-01	N/A	6.1E+03 N	2.4E+01	Csoil	NO	BSL
	71-43-2	Benzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.1E+00 C*	7.3E-03	Csoil	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.7E-01 C	2.9E-03	Csoil	NO	DLBSL
	75-25-2	Bromoform	ND	ND	MG/KG		0/18	0.0084 - 0.018	1.8E-02	N/A	6.2E+01 C*	1.9E-02	Csoil	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	MG/KG		0/18	0.0084 - 0.018	1.8E-02	N/A	7.3E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	8.2E+01 NS	3.8E+00	Csoil	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.1E-01 C	2.0E-03	Csoil	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.9E+01 N	4.5E-01	Csoil	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.5E+03 NS	1.6E+01	Csoil	NO	DLBSL
	67-66-3	Chloroform	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.9E-01 C	3.4E-01	Csoil	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.2E+01 N	1.5E-02	Csoil	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.6E+01 N	3.6E-01	Csoil	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.2E+02 NS	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.8E-01 C	1.9E-03	Csoil	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.8E+01 N	2.9E+01	Csoil	NO	DLBSL
	100-41-4	Ethylbenzene	1.1E-03 J	1.1E-03 J	MG/KG	IR86-SS102-0-0_5-09D	1/18	0.0042 - 0.0091	1.1E-03	N/A	5.4E+00 C	8.1E+00	Csoil	NO	BSL
	98-82-8	Isopropylbenzene	2.5E-03 J	2.5E-03 J	MG/KG	IR86-SS102-0-0_5-09D	1/18	0.0042 - 0.0091	2.5E-03	N/A	2.1E+02 NS	1.3E+00	Csoil	NO	BSL
	79-20-9	Methyl acetate	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	7.8E+03 NS	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	5.7E+01 NS	N/A	N/A	NO	DLBSL

TABLE H 2.11

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	75-09-2	Methylene chloride	1.2E-02	1.2E-02	MG/KG	IR86-SS114-0-0_5-09D	1/18	0.0042 - 0.0091	1.2E-02	N/A	1.1E+01 C	2.3E-02	Csoil	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	4.3E+01 C	8.5E-02	Csoil	NO	DLBSL
	100-42-5	Styrene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.3E+02 NS	9.2E-01	Csoil	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	5.5E-01 C	5.0E-03	Csoil	NO	DLBSL
	108-88-3	Toluene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	5.0E+02 NS	5.5E+00	Csoil	NO	DLBSL
	156-60-5	trans-1,2-Dichloroethene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.5E+01 N	5.1E-01	Csoil	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	1.7E+00 C*	2.3E-03	Csoil	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	2.8E+00 C	1.8E-02	Csoil	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	7.9E+01 N	2.4E+01	Csoil	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	MG/KG		0/18	0.0042 - 0.0091	9.1E-03	N/A	6.0E-02 C	1.9E-04	Csoil	NO	DLBSL
	1330-20-7	Xylene, total	9.0E-03	9.0E-03	MG/KG	IR86-SS102-0-0_5-09D	1/18	0.0042 - 0.0091	9.0E-03	N/A	6.3E+01 NS	6.0E+00	Csoil	NO	BSL
	92-52-4	1,1-Biphenyl	ND	ND	MG/KG		0/15	0.29 - 8.3	8.3E+00	N/A	2.1E+02 NS	4.3E+01	Csoil	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	4.6E+00 C	1.3E-03	Csoil	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.2E+02 N	1.4E+00	Csoil	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	MG/KG		0/17	0.35 - 0.48	4.8E-01	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.6E+00 C*	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	91-58-7	2-Chloronaphthalene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.8E+02 NS	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.9E+01 N	4.1E-03	Csoil	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.1E+01 N	1.6E+00	N/A	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.9E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.1E+00 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	MG/KG		0/17	0.42 - 0.57	5.7E-01	N/A	4.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	2.4E+00 C	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.1E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	MG/KG		0/18	0.072 - 0.098	9.8E-02	N/A	3.1E+01 N	4.0E-01	Csoil	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	2.4E+01 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	MG/KG		0/18	0.32 - 0.44	4.4E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	MG/KG		0/18	0.0035 - 0.0048	4.8E-03	N/A	3.4E+02 N	8.4E+00	Csoil	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	MG/KG		0/18	0.0035 - 0.0048	4.8E-03	N/A	3.4E+02 N	1.1E+01	Csoil	NO	DLBSL

TABLE H 2.11

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	98-86-2	Acetophenone	2.4E-02 J	2.4E-02 J	MG/KG	IR86-SB114-05-06-09D	1/15	0.27 - 0.37	2.4E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	120-12-7	Anthracene	1.0E-03 J	4.4E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	5/18	0.0035 - 0.0048	4.4E-02	N/A	1.7E+03 N	6.6E+02	Csoil	NO	BSL
	1912-24-9	Atrazine	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	2.1E+00 C	2.5E-02	Csoil	NO	DLBSL
	100-52-7	Benzaldehyde	2.8E-02 J	3.0E-02 J	MG/KG	IR86-SS113-0-0_5-09D	2/18	0.27 - 0.37	3.0E-02	N/A	7.8E+02 NS	N/A	N/A	NO	BSL
	56-55-3	**Benzo(a)anthracene**	**1.4E-03 J**	**2.4E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**10/18**	**0.0035 - 0.022**	**2.4E-01**	**N/A**	**1.5E-01 C**	**1.8E-01**	**Csoil**	**YES**	**ASL**
	50-32-8	**Benzo(a)pyrene**	**2.2E-03 J**	**2.9E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**10/18**	**0.0035 - 0.022**	**2.9E-01**	**N/A**	**1.5E-02 C**	**5.9E-02**	**Csoil**	**YES**	**ASL**
	205-99-2	**Benzo(b)fluoranthene**	**4.6E-03 J**	**3.6E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**10/18**	**0.0035 - 0.022**	**3.6E-01**	**N/A**	**1.5E-01 C**	**6.0E-01**	**Csoil**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	1.4E-03 J	2.3E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	9/18	0.0035 - 0.0048	2.3E-01	N/A	1.7E+02 N	3.6E+02	Csoil	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**1.8E-03 J**	**2.8E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**10/18**	**0.0035 - 0.022**	**2.8E-01**	**N/A**	**1.5E+00 C**	**5.9E+00**	**Csoil**	**YES**	**CPAH**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	2.1E-01 C	1.4E-04	Csoil	NO	DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.4E-01 J	1.4E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	1/18	0.27 - 0.37	1.4E-01	N/A	3.5E+01 C*	7.2E+00	Csoil	NO	BSL
	85-68-7	Butylbenzylphthalate	6.0E-02 J	6.0E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	1/18	0.27 - 0.37	6.0E-02	N/A	2.6E+02 C*	1.5E+02	Csoil	NO	BSL
	105-60-2	Caprolactam	ND	ND	MG/KG		0/17	0.27 - 0.37	3.7E-01	N/A	3.1E+03 N	1.8E+01	Csoil	NO	DLBSL
	86-74-8	Carbazole	4.6E-02 J	4.6E-02 J	MG/KG	IR86-SS114D-0-0_5-09D	1/18	0.27 - 0.37	4.6E-02	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	**Chrysene**	**3.3E-03 J**	**2.9E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**9/18**	**0.0035 - 0.022**	**2.9E-01**	**N/A**	**1.5E+01 C**	**1.8E+01**	**Csoil**	**YES**	**CPAH**
	53-70-3	**Dibenz(a,h)anthracene**	**8.3E-03**	**8.3E-03**	**MG/KG**	**IR86-SS108-0-0_5-09D**	**1/18**	**0.0035 - 0.0048**	**8.3E-03**	**N/A**	**1.5E-02 C**	**1.9E-01**	**Csoil**	**YES**	**CPAH**
	132-64-9	Dibenzofuran	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	7.8E+00 N	4.7E+00	Csoil	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	4.9E+03 N	3.7E+01	Csoil	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	3.0E-02 J	3.0E-02 J	MG/KG	IR86-SS113-0-0_5-09D	1/18	0.27 - 0.37	3.0E-02	N/A	6.1E+02 N	1.9E+01	Csoil	NO	BSL
	117-84-0	Di-n-octylphthalate	4.7E-02 J	4.7E-02 J	MG/KG	IR86-SS102-0-0_5-09D	1/18	0.27 - 0.37	4.7E-02	N/A	N/A	3.8E+01	Csoil	NO	NTX
	206-44-0	Fluoranthene	2.8E-03 J	4.3E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	10/18	0.0035 - 0.022	4.3E-01	N/A	2.3E+02 N	3.3E+02	Csoil	NO	BSL
	86-73-7	Fluorene	ND	ND	MG/KG		0/18	0.0035 - 0.0048	4.8E-03	N/A	2.3E+02 N	5.6E+01	Csoil	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	3.0E-01 C	2.6E-03	Csoil	YES	DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.2E+00 C**	8.7E-03	Csoil	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	MG/KG		0/17	0.27 - 0.37	3.7E-01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.1E+00 C**	N/A	N/A	NO	DLBSL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**2.0E-03 J**	**2.2E-01 J**	**MG/KG**	**IR86-SS114D-0-0_5-09D**	**9/18**	**0.0035 - 0.022**	**2.2E-01**	**N/A**	**1.5E-01 C**	**2.0E+00**	**Csoil**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	MG/KG		0/18	0.19 - 0.26	2.6E-01	N/A	5.1E+02 C*	2.1E-01	Csoil	NO	DLBSL
	91-20-3	Naphthalene	1.7E-03 J	2.9E-03 J	MG/KG	IR86-SB102-07-08-09D	2/18	0.0035 - 0.0048	2.9E-03	N/A	3.6E+00 C*	2.1E-01	Csoil	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	6.9E-02 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	9.9E+01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	4.8E+00 C*	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	MG/KG		0/18	0.45 - 0.62	6.2E-01	N/A	8.9E-01 C	3.1E-02	Csoil	NO	DLBSL
	85-01-8	Phenanthrene	2.7E-03 J	1.1E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	8/18	0.0035 - 0.0048	1.1E-01	N/A	1.7E+03 N	5.7E+01	Csoil	NO	BSL
	108-95-2	Phenol	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	N/A	1.8E+03 N	2.3E-01	Csoil	NO	DLBSL
	129-00-0	Pyrene	2.6E-03 J	3.7E-01 J	MG/KG	IR86-SS114D-0-0_5-09D	10/18	0.0035 - 0.022	3.7E-01	N/A	1.7E+02 N	2.2E+02	Csoil	NO	BSL

TABLE H 2.11

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	72-54-8	4,4'-DDD	7.1E-04 J	1.1E-02	MG/KG	IR86-SB108-05-06-09D	7/18	0.0035 - 0.0048	1.1E-02	N/A	2.0E+00 C	2.4E-01	Csoil	NO	BSL
	72-55-9	4,4'-DDE	4.1E-04 J	1.9E-02	MG/KG	IR86-SS102-0-0_5-09D	10/18	0.0035 - 0.0048	1.9E-02	N/A	1.4E+00 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	1.2E-03 J	1.5E-02	MG/KG	IR86-SS113-0-0_5-09D	5/18	0.0035 - 0.0048	1.5E-02	N/A	1.7E+00 C*	3.4E-01	Csoil	NO	BSL
	309-00-2	Aldrin	2.0E-03 J	2.0E-03 J	MG/KG	IR86-SB114-05-06-09D	1/18	0.0018 - 0.0025	2.0E-03	N/A	2.9E-02 C*	N/A	N/A	NO	BSL
	319-84-6	alpha-BHC	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	7.7E-02 C	1.2E-03	Csoil	NO	DLBSL
	5103-71-9	alpha-Chlordane	9.3E-03 J	9.3E-03 J	MG/KG	IR86-SS110-0-0_5-09D	1/18	0.0018 - 0.0025	9.3E-03	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	3.9E-01 N	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	MG/KG		0/18	0.072 - 0.098	9.8E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	1.4E-01 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	11097-69-1	**Aroclor-1254**	**ND**	**ND**	**MG/KG**		**0/18**	**0.035 - 0.048**	**4.8E-02**	**N/A**	**1.1E-01 C****	**N/A**	**N/A**	**NO**	**DLBSL**
	11096-82-5	Aroclor-1260	ND	ND	MG/KG		0/18	0.035 - 0.048	4.8E-02	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	2.7E-01 C	1.2E-03	Csoil	NO	DLBSL
	60-57-1	Dieldrin	6.9E-04 J	1.7E-03 J	MG/KG	IR86-SS103D-0-0_5-09D	3/18	0.0035 - 0.0048	1.7E-03	N/A	3.0E-02 C	8.1E-04	Csoil	NO	BSL
	959-98-8	Endosulfan I	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	3.7E+01 N	5.6E+00	Csoil	NO	DLBSL
	33213-65-9	Endosulfan II	2.7E-03 J	8.8E-03 J	MG/KG	IR86-SS110-0-0_5-09D	4/18	0.0035 - 0.0048	8.8E-03	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	1031-07-8	Endosulfan sulfate	9.2E-04 J	9.2E-04 J	MG/KG	IR86-SB108-05-06-09D	1/18	0.0035 - 0.0048	9.2E-04	N/A	3.7E+01 N	N/A	N/A	NO	BSL
	72-20-8	Endrin	ND	ND	MG/KG		0/18	0.0035 - 0.0048	4.8E-03	N/A	1.8E+00 N	8.1E-01	Csoil	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	MG/KG		0/18	0.0035 - 0.0048	4.8E-03	N/A	1.8E+00 N	N/A	N/A	NO	DLBSL
	53494-70-5	Endrin ketone	3.5E-03 J	1.7E-02 J	MG/KG	IR86-SB114-05-06-09D	2/18	0.0035 - 0.0048	1.7E-02	N/A	1.8E+00 N	N/A	N/A	NO	BSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	5.2E-01 C*	1.8E-03	Csoil	NO	DLBSL
	5103-74-2	gamma-Chlordane	1.0E-03 J	4.3E-03 J	MG/KG	IR86-SS113-0-0_5-09D	3/18	0.0018 - 0.0025	4.3E-03	N/A	1.6E+00 C*	6.8E-02	Csoil	NO	BSL
	76-44-8	Heptachlor	ND	ND	MG/KG		0/18	0.0018 - 0.0025	2.5E-03	N/A	1.1E-01 C	6.6E-03	Csoil	NO	DLBSL
	1024-57-3	Heptachlor epoxide	6.7E-03 J	8.4E-03	MG/KG	IR86-SS113-0-0_5-09D	2/18	0.0018 - 0.0025	8.4E-03	N/A	5.3E-02 C*	8.2E-04	Csoil	NO	BSL
	72-43-5	Methoxychlor	2.9E-03 J	5.1E-02 J	MG/KG	IR86-SS110-0-0_5-09D	2/18	0.018 - 0.025	5.1E-02	N/A	3.1E+01 N	2.2E+01	Csoil	NO	BSL
	8001-35-2	Toxaphene	ND	ND	MG/KG		0/18	0.032 - 0.044	4.4E-02	N/A	4.4E-01 C	4.6E-02	Csoil	NO	DLBSL
	7429-90-5	**Aluminum**	**3.1E+03**	**5.2E+04**	**MG/KG**	**IR86-SB110-06-07-09D**	**18/18**	**11 - 29**	**5.2E+04**	**5.5E+03**	**7.7E+03 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-36-0	Antimony	2.5E-01 J	4.4E-01 J	MG/KG	IR86-SB112-05-06-09D	4/18	0.54 - 0.74	4.4E-01	3.6E-01	3.1E+00 N	N/A	N/A	NO	BSL
	7440-38-2	**Arsenic**	**3.3E-01 J**	**2.0E+01**	**MG/KG**	**IR86-SB112-05-06-09D**	**15/18**	**0.54 - 1.4**	**2.0E+01**	**6.3E-01**	**3.9E-01 C***	**5.8E+00**	**Csoil**	**YES**	**ASL**
	7440-39-3	Barium	1.3E+01	9.1E+01	MG/KG	IR86-SS114D-0-0_5-09D	18/18	1.4 - 1.9	9.1E+01	1.4E+01	1.5E+03 N	5.8E+02	Csoil	NO	BSL
	7440-41-7	Beryllium	3.6E-02 J	5.4E-01	MG/KG	IR86-SB110-06-07-09D	10/18	0.22 - 0.29	5.4E-01	1.0E-01	1.6E+01 N	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	2.1E-02 J	1.8E+00	MG/KG	IR86-SS114D-0-0_5-09D	15/18	0.11 - 0.15	1.8E+00	2.3E-02	7.0E+00 N	3.0E+00	N/A	NO	BSL
	7440-70-2	Calcium	2.6E+01 J	7.0E+04	MG/KG	IR86-SS102-0-0_5-09D	18/18	270 - 14000	7.0E+04	4.4E+02	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**3.4E+00**	**6.3E+01**	**MG/KG**	**IR86-SB110-06-07-09D**	**18/18**	**0.27 - 0.37**	**6.3E+01**	**6.1E+00**	**2.9E-01 C**	**3.8E+00**	**Csoil**	**YES**	**ASL**
	7440-48-4	**Cobalt**	**6.1E-01 J**	**2.8E+00**	**MG/KG**	**IR86-SB110-06-07-09D**	**18/18**	**1.4 - 1.9**	**2.8E+00**	**2.9E-01**	**2.3E+00 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-50-8	Copper	5.4E-01	1.1E+01	MG/KG	IR86-SS114-0-0_5-09D	16/18	0.27 - 0.72	1.1E+01	2.6E+00	3.1E+02 N	7.0E+02	Csoil	NO	BSL

TABLE H 2.11

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7439-89-6	**Iron**	**2.5E+03**	**2.5E+04 J**	**MG/KG**	**IR86-SB112-05-06-09D**	**18/18**	**5.4 - 7.4**	**2.5E+04**	**3.2E+03**	**5.5E+03 N**	**1.5E+02**	**Csoil**	**YES**	**ASL**
	7439-92-1	Lead	2.7E+00 J	2.0E+01	MG/KG	IR86-SB110-06-07-09D	17/18	0.54 - 1.4	2.0E+01	8.5E+00	4.0E+02 NL	2.7E+02	Csoil	NO	BSL
	7439-95-4	Magnesium	9.9E+01 J	2.2E+03	MG/KG	IR86-SB110-06-07-09D	18/18	270 - 370	2.2E+03	2.4E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	7.3E+00	7.9E+01	MG/KG	IR86-SS102-0-0_5-09D	18/18	0.81 - 1.1	7.9E+01	9.2E+00	1.8E+02 N	6.5E+01	Csoil	NO	BSL
	7439-97-6	Mercury	3.4E-02 J	6.4E-02 J	MG/KG	IR86-SS113-0-0_5-09D	8/18	0.09 - 0.12	6.4E-02	7.1E-02	2.3E+00 N	1.0E+00	Csoil	NO	BSL
	7440-02-0	Nickel	1.4E+00 J	8.2E+00	MG/KG	IR86-SB110-06-07-09D	18/18	2.2 - 2.9	8.2E+00	1.2E+00	1.5E+02 N	1.3E+02	Csoil	NO	BSL
	7440-09-7	Potassium	2.7E+02 J	2.5E+03 J	MG/KG	IR86-SB110-06-07-09D	17/18	270 - 370	2.5E+03	1.2E+02	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	2.3E-01 J	9.2E-01 J	MG/KG	IR86-SB112-05-06-09D	8/18	0.54 - 1.4	9.2E-01	5.0E-01	3.9E+01 N	2.1E+00	Csoil	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/18	0.27 - 0.37	3.7E-01	1.3E-01	3.9E+01 N	3.4E+00	Csoil	NO	DLBSL
	7440-23-5	Sodium	3.1E+01 J	3.8E+02	MG/KG	IR86-SS102-0-0_5-09D	17/18	270 - 370	3.8E+02	6.8E+01	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/18	2.7 - 7.2	7.2E+00	3.6E-01	N/A	N/A	N/A	NO	NTX
	7440-62-2	**Vanadium**	**1.0E+01**	**1.2E+02**	**MG/KG**	**IR86-SB112-05-06-09D**	**18/18**	**2.7 - 3.7**	**1.2E+02**	**8.9E+00**	**3.9E+01 N**	**N/A**	**N/A**	**YES**	**ASL**
	7440-66-6	Zinc	2.3E+00 J	9.2E+01 J	MG/KG	IR86-SS114D-0-0_5-09D	18/18	2.7 - 3.7	9.2E+01	6.6E+00	2.3E+03 N	1.2E+03	Csoil	NO	BSL

* Surface soil & subsurface soil combined

[1] Minimum/Maximum detected concentrations.

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values are two times the arithmetic mean basewide background surface soil concentrations.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Residential Regional Screening Levels for Chemical Contaminants at Superfund Sites(based on 10-6 for carcinogens . and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml

RSL value for 1,4-Dichlorobenzene used as surrogate for 1,3-Dichlorobenzene.

RSL value for n-hexane used as surrogate for methylcyclohexane.

RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.

RSL value for Acenaphthene used as surrogate for Acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for technical chlordane used as surrogate for alpha-chlordane.

RSL value for technical-HCH used as surrogate for delta-BHC.

RSL value for technical chlordane used as surrogate for gamma-chlordane.

The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action

RSL value for Manganese (water) used as surrogate for manganese.

RSL value for Mercury (inorganic salts) used as surrogate for mercury.

RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.

RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.

RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.

RSL value for chromium VI used as surrogate for chromium.

RSL value for vanadium based on vanadium and compounds.

[5] Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
- Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)

Deletion Reason:
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

N/A = Not Applicable/Not Available

ND = Not Detected

NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

C = Carcinogenic

N = Noncarcinogenic

C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level

C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level

N = Noncarcinogenic

S = saturation concentration higher than noncarcinogenic based RSL, C_{sat} = the contaminant concentration in soil at which the absorptive limits of the soil particles, the solubility limits of the soil pore water, and saturation of soil pore air have been reached

Csoil = Federal Remediation Branch Target Screening Values, calculated source concentraion for soil which is protective of groundwater, January 2010

Created by: Debbie Stannard/WDC

Checked by: Geanine Howard-Peebles/I

TABLE H 2.12

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Emissions from															
Soil*in	71-55-6	1,1,1-Trichloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	4.5E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL
Flight Line	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	4.9E-04	N/A	4.2E-02 C	N/A	N/A	NO	DLBSL
Area	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	µg/m^3		0/18	N/A - N/A	5.9E-03	N/A	3.1E+03 N	N/A	N/A	NO	DLBSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	1.0E-03	N/A	1.5E-01 C	N/A	N/A	NO	DLBSL
	75-34-3	1,1-Dichloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	3.6E-03	N/A	1.5E+00 C	N/A	N/A	NO	DLBSL
	75-35-4	1,1-Dichloroethene	ND	ND	µg/m^3		0/18	N/A - N/A	6.5E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	2.5E-04	N/A	2.1E-01 N	N/A	N/A	NO	DLBSL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	µg/m^3		0/18	N/A - N/A	2.3E-04	N/A	1.6E-04 C	N/A	N/A	YES	DLASL
	106-93-4	1,2-Dibromoethane	ND	ND	µg/m^3		0/18	N/A - N/A	8.7E-04	N/A	4.1E-03 C	N/A	N/A	NO	DLBSL
	95-50-1	1,2-Dichlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	6.4E-04	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	107-06-2	1,2-Dichloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	1.6E-03	N/A	9.4E-02 C	N/A	N/A	NO	DLBSL
	78-87-5	1,2-Dichloropropane	ND	ND	µg/m^3		0/18	N/A - N/A	2.1E-03	N/A	2.4E-01 C*	N/A	N/A	NO	DLBSL
	541-73-1	1,3-Dichlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	7.2E-04	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	106-46-7	1,4-Dichlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	7.2E-04	N/A	2.2E-01 C	N/A	N/A	NO	DLBSL
	78-93-3	2-Butanone	1.0E-03 J	1.3E-03 J	µg/m^3	IR86-SS111-0-0_5-09D	2/17	N/A - N/A	1.3E-03	N/A	5.2E+02 N	N/A	N/A	NO	BSL
	591-78-6	2-Hexanone	ND	ND	µg/m^3		0/18	N/A - N/A	1.1E-03	N/A	3.1E+00 N	N/A	N/A	NO	DLBSL
	108-10-1	4-Methyl-2-pentanone	ND	ND	µg/m^3		0/18	N/A - N/A	1.4E-03	N/A	3.1E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	1.5E-04 J	1.4E-02 J	µg/m^3	IR86-SS113-0-0_5-09D	10/18	N/A - N/A	1.4E-02	N/A	3.2E+03 N	N/A	N/A	NO	BSL
	71-43-2	Benzene	ND	ND	µg/m^3		0/18	N/A - N/A	2.1E-03	N/A	3.1E-01 C	N/A	N/A	NO	DLBSL
	75-27-4	Bromodichloromethane	ND	ND	µg/m^3		0/18	N/A - N/A	1.9E-03	N/A	6.6E-02 C	N/A	N/A	NO	DLBSL
	75-25-2	Bromoform	ND	ND	µg/m^3		0/18	N/A - N/A	7.3E-04	N/A	2.2E+00 C	N/A	N/A	NO	DLBSL
	74-83-9	Bromomethane	ND	ND	µg/m^3		0/18	N/A - N/A	1.1E-02	N/A	5.2E-01 N	N/A	N/A	NO	DLBSL
	75-15-0	Carbon disulfide	ND	ND	µg/m^3		0/18	N/A - N/A	6.5E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	µg/m^3		0/18	N/A - N/A	4.9E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-90-7	Chlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	1.2E-03	N/A	5.2E+00 N	N/A	N/A	NO	DLBSL
	75-00-3	Chloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	5.6E-03	N/A	1.0E+03 N	N/A	N/A	NO	DLBSL
	67-66-3	Chloroform	ND	ND	µg/m^3		0/18	N/A - N/A	2.8E-03	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	74-87-3	Chloromethane	ND	ND	µg/m^3		0/18	N/A - N/A	6.2E-03	N/A	9.4E+00 N	N/A	N/A	NO	DLBSL
	156-59-2	cis-1,2-Dichloroethene	ND	ND	µg/m^3		0/18	N/A - N/A	3.0E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	µg/m^3		0/18	N/A - N/A	2.2E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	110-82-7	Cyclohexane	ND	ND	µg/m^3		0/18	N/A - N/A	7.1E-03	N/A	6.3E+02 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	µg/m^3		0/18	N/A - N/A	3.6E-04	N/A	9.0E-02 C	N/A	N/A	NO	DLBSL
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	µg/m^3		0/18	N/A - N/A	9.0E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	100-41-4	Ethylbenzene	1.6E-04 J	1.6E-04 J	µg/m^3	IR86-SS102-0-0_5-09D	1/18	N/A - N/A	1.6E-04	N/A	9.7E-01 C	N/A	N/A	NO	BSL
	98-82-8	Isopropylbenzene	3.3E-04 J	3.3E-04 J	µg/m^3	IR86-SS102-0-0_5-09D	1/18	N/A - N/A	3.3E-04	N/A	4.2E+01 N	N/A	N/A	NO	BSL
	79-20-9	Methyl acetate	ND	ND	µg/m^3		0/18	N/A - N/A	9.2E-04	N/A	N/A	N/A	N/A	NO	NTX
	108-87-2	Methylcyclohexane	ND	ND	µg/m^3		0/18	N/A - N/A	3.9E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	4.4E-03	4.4E-03	µg/m^3	IR86-SS114-0-0_5-09D	1/18	N/A - N/A	4.4E-03	N/A	5.2E+00 C	N/A	N/A	NO	BSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	µg/m^3		0/18	N/A - N/A	1.5E-03	N/A	9.4E+00 C	N/A	N/A	NO	DLBSL
	100-42-5	Styrene	ND	ND	µg/m^3		0/18	N/A - N/A	7.9E-04	N/A	1.0E+02 N	N/A	N/A	NO	DLBSL
	127-18-4	Tetrachloroethene	ND	ND	µg/m^3		0/18	N/A - N/A	3.2E-03	N/A	4.1E-01 C	N/A	N/A	NO	DLBSL
	108-88-3	Toluene	ND	ND	µg/m^3		0/18	N/A - N/A	1.7E-03	N/A	5.2E+02 N	N/A	N/A	NO	DLBSL

TABLE H 2.12

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	156-60-5	trans-1,2-Dichloroethene	ND	ND	µg/m^3		0/18	N/A - N/A	3.0E-03	N/A	6.3E+00 N	N/A	N/A	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	µg/m^3		0/18	N/A - N/A	2.2E-03	N/A	6.1E-01 C*	N/A	N/A	NO	DLBSL
	79-01-6	Trichloroethene	ND	ND	µg/m^3		0/18	N/A - N/A	3.4E-03	N/A	1.2E+00 C	N/A	N/A	NO	DLBSL
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	µg/m^3		0/18	N/A - N/A	7.2E-03	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	µg/m^3		0/18	N/A - N/A	7.8E-03	N/A	1.6E-01 C	N/A	N/A	NO	DLBSL
	1330-20-7	Xylene, total	1.3E-03	1.3E-03	µg/m^3	IR86-SS102-0-0_5-09D	1/18	N/A - N/A	1.3E-03	N/A	1.0E+01 N	N/A	N/A	NO	BSL
	92-52-4	1,1-Biphenyl	ND	ND	µg/m^3		0/15	N/A - N/A	6.1E-02	N/A	N/A	N/A	N/A	NO	NTX
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	µg/m^3		0/18	N/A - N/A	8.6E-03	N/A	2.4E-01 C	N/A	N/A	NO	DLBSL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	88-06-2	2,4,6-Trichlorophenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	7.8E-01 C	N/A	N/A	NO	DLBSL
	120-83-2	2,4-Dichlorophenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	105-67-9	2,4-Dimethylphenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	51-28-5	2,4-Dinitrophenol	ND	ND	µg/m^3		0/17	N/A - N/A	3.5E-07	N/A	N/A	N/A	N/A	NO	NTX
	121-14-2	2,4-Dinitrotoluene	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	2.7E-02 C	N/A	N/A	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	91-58-7	2-Chloronaphthalene	ND	ND	µg/m^3		0/18	N/A - N/A	3.8E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-57-8	2-Chlorophenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.4E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-57-6	2-Methylnaphthalene	ND	ND	µg/m^3		0/18	N/A - N/A	5.2E-03	N/A	N/A	N/A	N/A	NO	NTX
	95-48-7	2-Methylphenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	µg/m^3		0/18	N/A - N/A	2.8E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	µg/m^3		0/18	N/A - N/A	2.4E-03	N/A	N/A	N/A	N/A	NO	NTX
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	7.2E-03 C	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	5.2E-03 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	µg/m^3		0/17	N/A - N/A	4.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	101-55-3	4-Bromophenyl-phenylether	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	µg/m^3		0/18	N/A - N/A	9.8E-04	N/A	N/A	N/A	N/A	NO	NTX
	106-47-8	4-Chloroaniline	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	106-44-5	4-Methylphenol	ND	ND	µg/m^3		0/18	N/A - N/A	7.2E-08	N/A	6.3E+01 N	N/A	N/A	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	6.3E-01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	µg/m^3		0/18	N/A - N/A	4.9E-03	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	µg/m^3		0/18	N/A - N/A	2.8E-05	N/A	N/A	N/A	N/A	NO	NTX
	208-96-8	Acenaphthylene	ND	ND	µg/m^3		0/18	N/A - N/A	2.8E-05	N/A	N/A	N/A	N/A	NO	NTX
	98-86-2	Acetophenone	3.3E-04 J	3.3E-04 J	µg/m^3	IR86-SB114-05-06-09D	1/15	N/A - N/A	3.3E-04	N/A	N/A	N/A	N/A	NO	NTX
	120-12-7	Anthracene	1.6E-06 J	6.9E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	5/18	N/A - N/A	6.9E-05	N/A	N/A	N/A	N/A	NO	NTX
	1912-24-9	Atrazine	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	100-52-7	Benzaldehyde	1.0E-03 J	1.1E-03 J	µg/m^3	IR86-SS113-0-0_5-09D	2/18	N/A - N/A	1.1E-03	N/A	N/A	N/A	N/A	NO	NTX
	56-55-3	Benzo(a)anthracene	1.0E-09 J	1.8E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	1.8E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	50-32-8	Benzo(a)pyrene	1.6E-09 J	2.1E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	2.1E-07	N/A	8.7E-04 C	N/A	N/A	NO	BSL
	205-99-2	Benzo(b)fluoranthene	3.4E-09 J	2.6E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	2.6E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	191-24-2	Benzo(g,h,i)perylene	4.9E-07 J	8.0E-05 J	µg/m^3	IR86-SS114D-0-0_5-09D	9/18	N/A - N/A	8.0E-05	N/A	N/A	N/A	N/A	NO	NTX
	207-08-9	Benzo(k)fluoranthene	1.3E-09 J	2.1E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	2.1E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.12

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	µg/m^3		0/18	N/A - N/A	9.3E-04	N/A	7.4E-03 C	N/A	N/A	NO	DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.0E-07 J	1.0E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/18	N/A - N/A	1.0E-07	N/A	1.0E+00 C	N/A	N/A	NO	BSL
	85-68-7	Butylbenzylphthalate	4.4E-08 J	4.4E-08 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/18	N/A - N/A	4.4E-08	N/A	N/A	N/A	N/A	NO	NTX
	105-60-2	Caprolactam	ND	ND	µg/m^3		0/17	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-74-8	Carbazole	2.3E-04 J	2.3E-04 J	µg/m^3	IR86-SS114D-0-0_5-09D	1/18	N/A - N/A	2.3E-04	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	2.4E-09 J	2.1E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	9/18	N/A - N/A	2.1E-07	N/A	8.7E-02 C	N/A	N/A	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	6.1E-09	6.1E-09	µg/m^3	IR86-SS108-0-0_5-09D	1/18	N/A - N/A	6.1E-09	N/A	8.0E-04 C	N/A	N/A	NO	BSL
	132-64-9	Dibenzofuran	ND	ND	µg/m^3		0/18	N/A - N/A	3.6E-02	N/A	N/A	N/A	N/A	NO	NTX
	84-66-2	Diethylphthalate	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	131-11-3	Dimethyl phthalate	ND	ND	µg/m^3		0/18	N/A - N/A	1.6E-03	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	2.2E-08 J	2.2E-08 J	µg/m^3	IR86-SS113-0-0_5-09D	1/18	N/A - N/A	2.2E-08	N/A	N/A	N/A	N/A	NO	NTX
	117-84-0	Di-n-octylphthalate	3.5E-08 J	3.5E-08 J	µg/m^3	IR86-SS102-0-0_5-09D	1/18	N/A - N/A	3.5E-08	N/A	N/A	N/A	N/A	NO	NTX
	206-44-0	Fluoranthene	2.1E-09 J	3.2E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	3.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	ND	ND	µg/m^3		0/18	N/A - N/A	1.4E-05	N/A	N/A	N/A	N/A	NO	NTX
	118-74-1	Hexachlorobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	5.3E-03 C	N/A	N/A	NO	DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	1.1E-01 C	N/A	N/A	NO	DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	µg/m^3		0/17	N/A - N/A	2.7E-07	N/A	2.1E-02 N	N/A	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	6.1E-01 C	N/A	N/A	NO	DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	1.5E-09 J	1.6E-07 J	µg/m^3	IR86-SS114D-0-0_5-09D	9/18	N/A - N/A	1.6E-07	N/A	8.7E-03 C	N/A	N/A	NO	BSL
	78-59-1	Isophorone	ND	ND	µg/m^3		0/18	N/A - N/A	1.9E-07	N/A	2.1E+02 N	N/A	N/A	NO	DLBSL
	91-20-3	Naphthalene	3.0E-05 J	5.1E-05 J	µg/m^3	IR86-SB102-07-08-09D	2/18	N/A - N/A	5.1E-05	N/A	7.2E-02 C*	N/A	N/A	NO	BSL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	1.2E-03 C	N/A	N/A	NO	DLBSL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	9.4E-01 C	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	µg/m^3		0/18	N/A - N/A	4.1E-03	N/A	6.1E-02 C	N/A	N/A	NO	DLBSL
	87-86-5	Pentachlorophenol	ND	ND	µg/m^3		0/18	N/A - N/A	4.6E-07	N/A	4.8E-01 C	N/A	N/A	NO	DLBSL
	85-01-8	Phenanthrene	4.3E-06 J	1.7E-04 J	µg/m^3	IR86-SS114D-0-0_5-09D	8/18	N/A - N/A	1.7E-04	N/A	N/A	N/A	N/A	NO	NTX
	108-95-2	Phenol	ND	ND	µg/m^3		0/18	N/A - N/A	3.6E-03	N/A	2.1E+01 N	N/A	N/A	NO	DLBSL
	129-00-0	Pyrene	9.0E-07 J	1.3E-04 J	µg/m^3	IR86-SS114D-0-0_5-09D	10/18	N/A - N/A	1.3E-04	N/A	N/A	N/A	N/A	NO	NTX
	72-54-8	4,4'-DDD	5.2E-10 J	8.1E-09	µg/m^3	IR86-SB108-05-06-09D	7/18	N/A - N/A	8.1E-09	N/A	3.5E-02 C	N/A	N/A	NO	BSL
	72-55-9	4,4'-DDE	3.0E-10 J	1.4E-08	µg/m^3	IR86-SS102-0-0_5-09D	10/18	N/A - N/A	1.4E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	50-29-3	4,4'-DDT	8.8E-10 J	1.1E-08	µg/m^3	IR86-SS113-0-0_5-09D	5/18	N/A - N/A	1.1E-08	N/A	2.5E-02 C	N/A	N/A	NO	BSL
	309-00-2	Aldrin	1.5E-09 J	1.5E-09 J	µg/m^3	IR86-SB114-05-06-09D	1/18	N/A - N/A	1.5E-09	N/A	5.0E-04 C	N/A	N/A	NO	BSL
	319-84-6	alpha-BHC	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	1.4E-03 C	N/A	N/A	NO	DLBSL
	5103-71-9	alpha-Chlordane	6.8E-09 J	6.8E-09 J	µg/m^3	IR86-SS110-0-0_5-09D	1/18	N/A - N/A	6.8E-09	N/A	2.4E-02 C*	N/A	N/A	NO	BSL
	12674-11-2	Aroclor-1016	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-08	N/A	1.2E-01 C	N/A	N/A	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	µg/m^3		0/18	N/A - N/A	9.4E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11141-16-5	Aroclor-1232	ND	ND	µg/m^3		0/18	N/A - N/A	4.6E-04	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	53469-21-9	Aroclor-1242	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	12672-29-6	Aroclor-1248	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11097-69-1	Aroclor-1254	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	11096-82-5	Aroclor-1260	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-08	N/A	4.3E-03 C	N/A	N/A	NO	DLBSL
	319-85-7	beta-BHC	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	4.6E-03 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	4.8E-03 C	N/A	N/A	NO	DLBSL

TABLE H 2.12

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	60-57-1	Dieldrin	5.1E-10 J	1.3E-09 J	µg/m^3	IR86-SS103D-0-0_5-09D	3/18	N/A - N/A	1.3E-09	N/A	5.3E-04 C	N/A	N/A	NO	BSL
	959-98-8	Endosulfan I	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	N/A	N/A	N/A	NO	NTX
	33213-65-9	Endosulfan II	2.0E-09 J	6.5E-09 J	µg/m^3	IR86-SS110-0-0_5-09D	4/18	N/A - N/A	6.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	1031-07-8	Endosulfan sulfate	6.8E-10 J	6.8E-10 J	µg/m^3	IR86-SB108-05-06-09D	1/18	N/A - N/A	6.8E-10	N/A	N/A	N/A	N/A	NO	NTX
	72-20-8	Endrin	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	7421-93-4	Endrin aldehyde	ND	ND	µg/m^3		0/18	N/A - N/A	3.5E-09	N/A	N/A	N/A	N/A	NO	NTX
	53494-70-5	Endrin ketone	2.6E-09 J	1.3E-08 J	µg/m^3	IR86-SB114-05-06-09D	2/18	N/A - N/A	1.3E-08	N/A	N/A	N/A	N/A	NO	NTX
	58-89-9	gamma-BHC (Lindane)	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	7.8E-03 C	N/A	N/A	NO	DLBSL
	5103-74-2	gamma-Chlordane	7.4E-10 J	3.2E-09 J	µg/m^3	IR86-SS113-0-0_5-09D	3/18	N/A - N/A	3.2E-09	N/A	2.4E-02 C	N/A	N/A	NO	BSL
	76-44-8	Heptachlor	ND	ND	µg/m^3		0/18	N/A - N/A	1.8E-09	N/A	1.9E-03 C	N/A	N/A	NO	DLBSL
	1024-57-3	Heptachlor epoxide	4.9E-09 J	6.2E-09	µg/m^3	IR86-SS113-0-0_5-09D	2/18	N/A - N/A	6.2E-09	N/A	9.4E-04 C	N/A	N/A	NO	BSL
	72-43-5	**Methoxychlor**	**2.1E-09 J**	**3.8E-08 J**	**µg/m^3**	**IR86-SS110-0-0_5-09D**	**2/18**	**N/A - N/A**	**3.8E-08**	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**NTX**
	8001-35-2	Toxaphene	ND	ND	µg/m^3		0/18	N/A - N/A	3.2E-08	N/A	7.6E-03 C	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	2.3E-03	3.8E-02	µg/m^3	IR86-SB110-06-07-09D	18/18	N/A - N/A	3.8E-02	N/A	5.2E-01 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	1.8E-07 J	3.2E-07 J	µg/m^3	IR86-SB112-05-06-09D	4/18	N/A - N/A	3.2E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-38-2	Arsenic	2.4E-07 **J**	1.5E-05	µg/m^3	IR86-SB112-05-06-09D	15/18	N/A - N/A	1.5E-05	N/A	5.7E-04 C*	N/A	N/A	NO	BSL
	7440-39-3	Barium	9.6E-06	6.7E-05	µg/m^3	IR86-SS114D-0-0_5-09D	18/18	N/A - N/A	6.7E-05	N/A	5.2E-02 N	N/A	N/A	NO	BSL
	7440-41-7	Beryllium	2.6E-08 J	4.0E-07	µg/m^3	IR86-SB110-06-07-09D	10/18	N/A - N/A	4.0E-07	N/A	1.0E-03 C*	N/A	N/A	NO	BSL
	7440-43-9	Cadmium	1.5E-08 J	1.3E-06	µg/m^3	IR86-SS114D-0-0_5-09D	15/18	N/A - N/A	1.3E-06	N/A	1.0E-03 C**	N/A	N/A	NO	BSL
	7440-70-2	Calcium	1.9E-05 J	5.1E-02	µg/m^3	IR86-SS102-0-0_5-09D	18/18	N/A - N/A	5.1E-02	N/A	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	2.5E-06	4.6E-05	**µg/m^3**	**IR86-SB110-06-07-09D**	**18/18**	**N/A - N/A**	**4.6E-05**	**N/A**	**1.1E-05 C**	**N/A**	**N/A**	**YES**	**ASL**
	7440-48-4	Cobalt	4.5E-07 J	2.1E-06	µg/m^3	IR86-SB110-06-07-09D	18/18	N/A - N/A	2.1E-06	N/A	2.7E-04 C*	N/A	N/A	NO	BSL
	7440-50-8	Copper	4.0E-07	8.1E-06	µg/m^3	IR86-SS114-0-0_5-09D	16/18	N/A - N/A	8.1E-06	N/A	N/A	N/A	N/A	NO	NTX
	7439-89-6	Iron	1.8E-03 J	1.8E-02	µg/m^3	IR86-SB112-05-06-09D	18/18	N/A - N/A	1.8E-02	N/A	N/A	N/A	N/A	NO	NTX
	7439-92-1	Lead	2.0E-06 J	1.5E-05	µg/m^3	IR86-SB110-06-07-09D	17/18	N/A - N/A	1.5E-05	N/A	N/A	N/A	N/A	NO	NTX
	7439-95-4	Magnesium	7.3E-05	1.6E-03	µg/m^3	IR86-SB110-06-07-09D	18/18	N/A - N/A	1.6E-03	N/A	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	5.4E-06 J	5.8E-05 J	µg/m^3	IR86-SS102-0-0_5-09D	18/18	N/A - N/A	5.8E-05	N/A	5.2E-03 N	N/A	N/A	NO	BSL
	7439-97-6	Mercury	2.5E-08 J	4.7E-08	µg/m^3	IR86-SS113-0-0_5-09D	8/18	N/A - N/A	4.7E-08	N/A	3.1E-02 N	N/A	N/A	NO	BSL
	7440-02-0	Nickel	1.0E-06 J	6.0E-06 J	µg/m^3	IR86-SB110-06-07-09D	18/18	N/A - N/A	6.0E-06	N/A	9.4E-03 C*	N/A	N/A	NO	BSL
	7440-09-7	Potassium	2.0E-04 J	1.8E-03 J	µg/m^3	IR86-SB110-06-07-09D	17/18	N/A - N/A	1.8E-03	N/A	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	1.7E-07	6.8E-07	µg/m^3	IR86-SB112-05-06-09D	8/18	N/A - N/A	6.8E-07	N/A	2.1E+00 N	N/A	N/A	NO	BSL
	7440-22-4	Silver	ND	ND	µg/m^3		0/18	N/A - N/A	2.7E-07	N/A	N/A	N/A	N/A	NO	NTX
	7440-23-5	Sodium	2.3E-05	2.8E-04	µg/m^3	IR86-SS102-0-0_5-09D	17/18	N/A - N/A	2.8E-04	N/A	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	µg/m^3		0/18	N/A - N/A	5.3E-06	N/A	N/A	N/A	N/A	NO	NTX
	7440-62-2	Vanadium	7.4E-06 J	8.8E-05 J	µg/m^3	IR86-SB112-05-06-09D	18/18	N/A - N/A	8.8E-05	N/A	N/A	N/A	N/A	NO	NTX
	7440-66-6	Zinc	1.7E-06	6.8E-05	µg/m^3	IR86-SS114D-0-0_5-09D	18/18	N/A - N/A	6.8E-05	N/A	N/A	N/A	N/A	NO	NTX

TABLE H 2.12

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

* Surface soil & subsurface soil combined

[1] Minimum/Maximum calculated air concentrations from surface soil concentrations. Air concentrations calculated as $C_{air} = C_{soil}$*1000*(1/PEF + 1/VF).
PEF = 1.36E+09 m^3/kg. VF calculated for volatile constituents only, on Table 2.2A and 2.4A. PEF and VF from USEPA's Soil Screening Guidance. (USEPA, July 1996)

[2] Maximum concentration is used for screening. If ND, maximum detection limit used for screening.

[3] Background values not available.

[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online].
Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for Methyl Isobutyl Ketone (4-methyl-2-pentanone) used as surrogate for 2-Hexanone.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.

[5] Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
	Detection Limit Above Screening Level (DLASL), not quantitatively evaluated
	Chemical from same class (carcinogenic PAH) identified as a COPC (CPAH)
Deletion Reason:	No Toxicity Information (NTX)
	Essential Nutrient (NUT)
	Below Screening Level (BSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
N = Noncarcinogenic
C* = N screening level < 100x C screening level, therefore N screening value/10 used as screening level
C** = N screening level < 10x C screening level, therefore N screening value/10 used as screening level
N = Noncarcinogenic

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/D

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Middle Castle-Hayne Groundwater Tap Water	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	5.2E-01 J	5.2E-01 J	UG/L	IR86-GW19DW-09D	1/15	1 - 1	5.2E-01	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	BSL
	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.4E+00 C	7.0E+00	MCL	NO	DLBSL
												6.0E+00	NC2LGW		
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/1	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/15	5 - 5	1.4E+01	N/A	4.7E+00 N	2.8E+02	NC2LGW	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/15	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/15	10 - 10	1.0E+01	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/15	1 - 1	1.1E+01	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	NC2LGW		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	75-25-2	Bromoform	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	3.4E+00	3.4E+00	UG/L	IR86-GW58DW-10A	1/15	1 - 1	3.4E+00	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**1.9E-01 J**	**3.8E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**2/15**	**1 - 1**	3.8E-01	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	1.8E-01 J	1.8E-01 J	UG/L	R86-GW58DW-10A : IR86-GW61DW-09	2/15	1 - 1	1.8E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	cis-1,2-Dichloroethene	1.3E-01 J	1.3E-01 J	UG/L	IR86-GW61DW-09D	1/15	1 - 1	1.3E-01	N/A	7.3E+00 N	7.0E+01	MCL, N2CLGW	NO	BSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	NC2LGW	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	NC2LGW		
	98-82-8	**Isopropylbenzene**	**ND**	**ND**	**UG/L**		**0/15**	**1 - 1**	**1.0E+00**	**N/A**	**6.8E+01 N**	**5.0E+00**	**MCL**	**NO**	**DLBSL**
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/15	5 - 5	5.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.2E+01 C	2.0E+01	NC2LGW	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**2.4E+00**	**2.4E+00**	**UG/L**	**IR86-GW19DW-09D**	**1/15**	**1 - 1**	2.4E+00	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	2.5E-01 J	1.0E+00	UG/L	IR86-GW19DW-09D	6/15	1 - 1	1.0E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.1E+01 N	1.0E+02	MCL, N2CLGW	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	Trichloroethene	2.9E-01 J	2.9E-01 J	UG/L	IR86-GW61DW-09D	1/15	0.5 - 0.5	2.9E-01	N/A	2.0E+00 C	5.0E+00	MCL	NO	BSL
												3.0E+00	NC2LGW		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	**Vinyl chloride**	**ND**	**ND**	**UG/L**		**0/15**	**0.5 - 0.5**	**5.0E-01**	**N/A**	**1.6E-02 C**	**5.0E+00**	**MCL**	**YES**	**DLASL**
												3.0E-02	NC2LGW		
	1330-20-7	Xylene, total	2.8E-01 J	2.8E-01 J	UG/L	IR86-GW59DW-09D	1/15	0.5 - 0.5	2.8E-01	N/A	2.0E+01 N	2.0E+00	MCL	NO	BSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	7.3E+00 N	N/A	N/A	NO	DLBSL

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/3	2.1 - 2.2	2.2E+00	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/3	2.1 - 2.2	2.2E+00	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	2.9E-01 N	N/A	N/A	YES	DLASL
	101-55-3	**4-Bromophenyl-phenylether**	**ND**	**ND**	**UG/L**		**0/3**	**1.1 - 1.1**	**1.1E+00**	**N/A**	**N/A**	**N/A**	**N/A**	**NO**	**NTX**
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/3	2.1 - 2.2	2.2E+00	N/A	1.8E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/3	2.1 - 2.2	2.2E+00	N/A	3.4E+00 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	2.0E+02	NC2LGW	NO	BSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	2.9E-01 C	3.0E+00	MCL, N2CLGW	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.9E-02 C	5.0E-02	NC2LGW	YES	DLASL
	50-32-8	**Benzo(a)pyrene**	**2.0E-01 J**	**2.0E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**1/4**	**0.2 - 0.22**	**2.0E-01**		**2.9E-03 C**	**2.0E-01**	**MCL**	**YES**	**ASL**
												5.0E-03	**NC2LGW**		
	205-99-2	**Benzo(b)fluoranthene**	**3.8E-01 J**	**3.8E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**1/4**	**0.2 - 0.22**	**3.8E-01**	**N/A**	**2.9E-02 C**	**5.0E-02**	**NC2LGW**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	4.6E-01 J	4.6E-01 J	UG/L	IR86-GW59DW-09D	1/4	0.2 - 0.22	4.6E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	BSL
	207-08-9	**Benzo(k)fluoranthene**	**3.1E-01 J**	**3.1E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**1/4**	**0.2 - 0.22**	**3.1E-01**	**N/A**	**2.9E-01 C**	**5.0E-01**	**NC2LGW**	**YES**	**ASL**
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	3.3E-01 J	3.3E-01 J	UG/L	IR86-GW61DW-09D	1/3	5.3 - 5.6	3.3E-01	N/A	4.8E+00 C	6.0E+00	MCL	NO	BSL
												3.0E+00	NC2LGW		
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/3	2.1 - 2.2	2.2E+00	N/A	3.5E+01 C	1.0E+03	NC2LGW	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	1.8E+03 N	4.0E+03	NC2LGW	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.9E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	53-70-3	**Dibenz(a,h)anthracene**	**5.5E-01 J**	**5.5E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**1/4**	**0.2 - 0.22**	**5.5E-01**	**N/A**	**2.9E-03 C**	**5.0E-03**	**NC2LGW**	**YES**	**ASL**

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	2.9E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	2.0E-01 J	2.0E-01 J	UG/L	IR86-GW61DW-09D	1/3	5.3 - 5.6	2.0E-01	N/A	3.7E+02 N	7.0E+02	NC2LGW	NO	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/2	1.1 - 1.1	1.1E+00	N/A	4.8E+00 C	1.0E+02	NC2LGW	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	DLBSL
	86-73-7	Fluorene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	8.6E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	2.2E+01 N	5.0E+01	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	**Indeno(1,2,3-cd)pyrene**	**4.5E-01 J**	**4.5E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**1/4**	**0.2 - 0.22**	**4.5E-01**	**N/A**	**2.9E-02 C**	**5.0E-02**	**NC2LGW**	**YES**	**ASL**
	78-59-1	Isophorone	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	7.1E+01 C	4.0E+01	NC2LGW	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.4E-01 C*	6.0E+00	NC2LGW	YES	DLASL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.4E+01 C	7.0E-04	NC2LGW	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.1E+03 N	3.0E+01	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	72-54-8	4,4'-DDD	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.8E-01 C	1.0E-01	NC2LGW	NO	DLBSL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.0E-01 C	N/A	N/A	NO	DLBSL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.0E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	309-00-2	Aldrin	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	4.0E-03 C	N/A	N/A	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.1E-02 C	2.0E-02	NC2LGW	YES	DLASL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/4	0.25 - 0.27	2.7E-01	N/A	2.6E-01 C**	N/A	N/A	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/4	0.5 - 0.55	5.5E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/4	0.6 - 0.66	6.6E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/4	0.5 - 0.55	5.5E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/4	0.5 - 0.55	5.5E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/4	0.5 - 0.55	5.5E-01	N/A	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/4	0.25 - 0.27	2.7E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	3.7E-02 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	3.7E-02 C	2.0E-02	NC2LGW	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	4.2E-03 C	2.0E-03	NC2LGW	YES	DLASL

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	959-98-8	Endosulfan I	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	6.1E-02 C	2.0E-01	MCL	NO	DLBSL
												3.0E-02	NC2LGW		
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.5E-02 C	4.0E-01	MCL	YES	DLASL
												8.0E-03	NC2LGW		
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	7.4E-03 C*	2.0E-01	MCL	YES	DLASL
												4.0E-03	NC2LGW		
	72-43-5	Methoxychlor	ND	ND	UG/L		0/4	0.1 - 0.11	1.1E-01	N/A	1.8E+01 N	4.0E+01	MCL, N2CLGW	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/4	0.25 - 0.27	2.7E-01	N/A	6.1E-02 C	3.0E+00	MCL	YES	DLASL
												3.0E-02	NC2LGW		
	7429-90-5	Aluminum	1.3E+02 J	5.2E+02	UG/L	IR86-GW56DW-10A	3/4	200 - 200	5.2E+02	8.0E+03	3.7E+03 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	ND	ND	UG/L		0/4	10 - 10	1.0E+01	3.2E+00	1.5E+00 N	6.0E+00	MCL	YES	DLASL
	7440-38-2	Arsenic	ND	ND	UG/L		0/4	10 - 10	1.0E+01	5.2E+00	4.5E-02 C	1.0E+01	MCL, N2CLGW	YES	DLASL
	7440-39-3	Barium	1.0E+01 J	1.9E+01 J	UG/L	IR86-GW59DW-09D	3/4	20 - 20	1.9E+01	8.9E+01	7.3E+02 N	2.0E+03	MCL	NO	BSL
												7.0E+02	NC2LGW		
	7440-41-7	Beryllium	ND	ND	UG/L		0/4	4 - 4	4.0E+00	7.8E-01	7.3E+00 N	N/A	N/A	NO	DLBSL
	7440-43-9	Cadmium	ND	ND	UG/L		0/4	2 - 2	2.0E+00	4.6E-01	1.8E+00 N	5.0E+00	MCL	YES	DLASL
												2.0E+00	NC2LGW		
	7440-70-2	Calcium	3.9E+04	6.5E+04	UG/L	IR86-GW56DW-10A	4/4	5000 - 5000	6.5E+04	1.0E+05	N/A	N/A	N/A	NO	NUT
	7440-47-3	**Chromium**	**5.2E+00**	**7.6E+01**	**UG/L**	**IR86-GW59DW-09D**	**3/4**	**5 - 5**	**7.6E+01**	**1.4E+01**	**4.3E-02 C**	**1.0E+02**	**MCL**	**YES**	**ASL**
												1.0E+01	**N2CLGW**		
	7440-48-4	Cobalt	ND	ND	UG/L		0/4	25 - 25	2.5E+01	6.0E+00	1.1E+00 N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	1.8E+00 J	1.8E+00 J	UG/L	IR86-GW59DW-09D	1/4	5 - 5	1.8E+00	9.4E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	NC2LGW		
	7439-89-6	Iron	3.2E+02	2.6E+03	UG/L	IR86-GW56DW-10A	7/7	100 - 100	2.6E+03	1.6E+04	2.6E+03 N	3.0E+02	NC2LGW	NO	BBL
	7439-92-1	Lead	ND	ND	UG/L		0/4	10 - 10	6.8E+00	1.0E+01	N/A	1.5E+01	MCL, N2CLGW	NO	NTX
	7439-95-4	Magnesium	4.6E+03 J	1.0E+04	UG/L	IR86-GW61DW-09D	4/4	5000 - 5000	1.0E+04	7.3E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.6E+01	6.6E+01	UG/L	IR86-GW56DW-10A	7/7	15 - 15	6.6E+01	2.7E+02	8.8E+01 N	5.0E+01	NC2LGW	NO	BSL
	7439-97-6	Mercury	ND	ND	UG/L		0/2	0.1 - 0.1	1.0E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	DLBSL
												1.0E+00	NC2LGW		
	7440-02-0	Nickel	ND	ND	UG/L		0/4	40 - 40	4.0E+01	6.2E+00	7.3E+01 N	1.0E+02	NC2LGW	NO	DLBSL
	7440-09-7	Potassium	9.2E+03	3.4E+04 J	UG/L	IR86-GW59DW-09D	4/4	5000 - 5000	3.4E+04	4.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/4	10 - 10	1.0E+01	3.2E+00	1.8E+01 N	5.0E+01	MCL	NO	DLBSL
												2.0E+01	NC2LGW		

TABLE H 2.13

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-22-4	Silver	ND	ND	UG/L		0/4	5 - 5	5.0E+00	7.0E-01	1.8E+01 N	2.0E+01	NC2LGW	NO	DLBSL
	7440-23-5	Sodium	4.8E+04	3.0E+05 J	UG/L	IR86-GW61DW-09D	4/4	5000 - 5000	3.0E+05	3.2E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/4	50 - 50	5.0E+01	3.5E+00	N/A	2.0E+00	MCL	NO	NTX
	7440-62-2	Vanadium	ND	ND	UG/L		0/4	50 - 50	5.0E+01	1.7E+01	1.8E+01 N	N/A	N/A	YES	DLASL
	7440-66-6	Zinc	9.2E+00 J	9.2E+00 J	UG/L	IR86-GW58DW-10A	1/4	20 - 20	9.2E+00	6.5E+01	1.1E+03 N	1.0E+03	NC2LGW	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean deep groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Level (BBL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.14

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surficial	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
Groundwater	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
Tap Water and	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.5E+00	6.2E+02	UG/L	IR86-GW10IW-09D	3/24	1 - 4	6.2E+02	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	BSL
Water in	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
Excavation Pit	**75-34-3**	**1,1-Dichloroethane**	**1.9E-01 J**	**3.4E+00**	**UG/L**	**IR86-GW10IW-09D**	**9/24**	**1 - 1**	**3.4E+00**	**N/A**	**2.4E+00 C**	**7.0E+00**	**MCL**	**YES**	**ASL**
												6.0E+00	**NC2LGW**		
	75-35-4	1,1-Dichloroethene	2.7E-01 J	4.0E+00	UG/L	IR86-GW61-09D	7/24	1 - 1	4.0E+00	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	BSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/13	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	**2-Hexanone**	**1.4E+01**	**1.4E+01**	**UG/L**	**IR86-GW63-10A**	**1/24**	**5 - 5**	**1.4E+01**	**N/A**	**4.7E+00 N**	**2.8E+02**	**NC2LGW**	**YES**	**ASL**
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/24	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/24	10 - 10	1.0E+01	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	71-43-2	**Benzene**	**1.1E-01 J**	**1.1E+01**	**UG/L**	**IR86-GW52-09D**	**14/24**	**1 - 1**	**1.1E+01**	**N/A**	**4.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												1.0E+00	**NC2LGW**		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	75-25-2	Bromoform	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	6.0E-01 J	6.0E-01 J	UG/L	IR86-GW39-10A	1/24	1 - 1	6.0E-01	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.14

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**4.4E-01 J**	**2.0E+00 J**	**UG/L**	**IR86-GW58-09D**	**4/24**	**1 - 1**	**2.0E+00**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	3.0E-01 J	3.0E-01 J	UG/L	IR86-GW52-09D	1/24	1 - 1	3.0E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	**cis-1,2-Dichloroethene**	**2.2E-01 J**	**1.5E+02 J**	**UG/L**	**IR86-GW58-09D**	**16/24**	**1 - 1**	**1.5E+02**	**N/A**	**7.3E+00 N**	**7.0E+01**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	6.1E-01 J	3.2E+01	UG/L	IR86-GW27IW-09D	5/24	1 - 1	3.2E+01	N/A	1.3E+03 N	N/A	N/A	NO	BSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	**Dichlorodifluoromethane (Freon-12)**	**1.4E+00**	**5.1E+01**	**UG/L**	**IR86-GW10IW-09D**	**4/24**	**1 - 1**	**5.1E+01**	**N/A**	**3.9E+01 N**	**1.0E+03**	**NC2LGW**	**YES**	**ASL**
	100-41-4	**Ethylbenzene**	**3.8E-01 J**	**4.6E+00**	**UG/L**	**IR86-GW52-09D**	**4/24**	**1 - 1**	**4.6E+00**	**N/A**	**1.5E+00 C**	**7.0E+02**	**MCL**	**YES**	**ASL**
												6.0E+02	**NC2LGW**		
	98-82-8	Isopropylbenzene	1.2E-01 J	4.6E-01 J	UG/L	IR86-GW52-09D	2/24	1 - 1	4.6E-01	N/A	6.8E+01 N	5.0E+00	MCL	NO	BSL
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	2.6E+00 J	4.1E+00 J	UG/L	IR86-GW47-09D	2/24	5 - 5	4.1E+00	N/A	8.8E+01 N	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	**Methyl-tert-butyl ether (MTBE)**	**6.6E+01**	**6.6E+01**	**UG/L**	**IR86-GW39-10A**	**1/24**	**1 - 1**	**6.6E+01**	**N/A**	**1.2E+01 C**	**2.0E+01**	**NC2LGW**	**YES**	**ASL**
	100-42-5	Styrene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**1.9E+02**	**1.9E+02**	**UG/L**	**IR86-GW10IW-09D**	**1/24**	**1 - 1**	**1.9E+02**	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	1.9E-01 J	5.1E+00	UG/L	IR86-GW52-09D	5/24	1 - 1	5.1E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	trans-1,2-Dichloroethene	2.2E-01 J	3.7E+00 J	UG/L	IR86-GW58-09D	5/24	1 - 1	3.7E+00	N/A	1.1E+01 N	1.0E+02	MCL, N2CLGW	NO	BSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	**Trichloroethene**	**5.3E-01**	**2.6E+02**	**UG/L**	**IR86-GW61-09D**	**14/24**	**0.5 - 0.5**	**2.6E+02**	**N/A**	**2.0E+00 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E+00	**NC2LGW**		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	**Vinyl chloride**	**1.1E+00**	**6.8E+01 J**	**UG/L**	**IR86-GW58-09D**	**3/24**	**0.5 - 0.5**	**6.8E+01**	**N/A**	**1.6E-02 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E-02	**NC2LGW**		
	1330-20-7	Xylene, total	6.3E+00	6.8E+00	UG/L	IR86-GW52-09D	2/24	0.5 - 0.5	6.8E+00	N/A	2.0E+01 N	2.0E+00	MCL	NO	BSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	7.3E+00 N	N/A	N/A	NO	DLBSL

TABLE H 2.14
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/8	2 - 2.2	2.2E+00	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/8	2 - 2.2	2.2E+00	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/8	2 - 2.2	2.2E+00	N/A	1.8E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/8	2 - 2.2	2.2E+00	N/A	3.4E+00 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	208-96-8	Acenaphthylene	2.6E-01	3.0E-01	UG/L	IR86-GW56-09D	3/8	0.2 - 0.22	3.0E-01	N/A	2.2E+02 N	2.0E+02	NC2LGW	NO	BSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	2.9E-01 C	3.0E+00	MCL, N2CLGW	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	2.9E-02 C	5.0E-02	NC2LGW	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	NC2LGW		
	205-99-2	**Benzo(b)fluoranthene**	**1.3E-01 J**	**1.3E-01 J**	**UG/L**	**IR86-GW60-09D**	**1/7**	**0.2 - 0.22**	**1.3E-01**	**N/A**	**2.9E-02 C**	**5.0E-02**	**NC2LGW**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	2.9E-01 C	5.0E-01	NC2LGW	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	3.2E-01 J	3.2E-01 J	UG/L	IR86-GW60-09D	1/8	5 - 5.6	3.2E-01	N/A	4.8E+00 C	6.0E+00	MCL	NO	BSL
												3.0E+00	NC2LGW		
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/8	2 - 2.2	2.2E+00	N/A	3.5E+01 C	1.0E+03	NC2LGW	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	1.8E+03 N	4.0E+03	NC2LGW	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	2.9E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	2.9E-03 C	5.0E-03	NC2LGW	YES	DLASL

TABLE H 2.14
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	2.9E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	3.7E+02 N	7.0E+02	NC2LGW	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	4.8E+00 C	1.0E+02	NC2LGW	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	DLBSL
	86-73-7	Fluorene	1.2E-01 J	1.2E-01 J	UG/L	IR86-GW60-09D : IR86-GW61-09D	2/8	0.2 - 0.22	1.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	BSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	8.6E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	2.2E+01 N	5.0E+01	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	2.9E-02 C	5.0E-02	NC2LGW	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	7.1E+01 C	4.0E+01	NC2LGW	NO	DLBSL
	91-20-3	**Naphthalene**	**1.9E-01 J**	**1.9E-01 J**	**UG/L**	**IR86-GW58-09D**	**1/8**	**0.2 - 0.22**	**1.9E-01**	**N/A**	**1.4E-01 C***	**6.0E+00**	**NC2LGW**	**YES**	**ASL**
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.4E+01 C	7.0E-04	NC2LGW	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.1E+03 N	3.0E+01	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	72-54-8	4,4'-DDD	2.3E-02 J	2.3E-02 J	UG/L	IR86-GW56-09D	1/8	0.025 - 0.027	2.3E-02	N/A	2.8E-01 C	1.0E-01	NC2LGW	NO	BSL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	2.0E-01 C	N/A	N/A	NO	DLBSL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	2.0E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	309-00-2	Aldrin	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	4.0E-03 C	N/A	N/A	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.1E-02 C	2.0E-02	NC2LGW	YES	DLASL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/8	0.25 - 0.27	2.7E-01	N/A	2.6E-01 C**	N/A	N/A	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/8	0.5 - 0.54	5.4E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/8	0.6 - 0.65	6.5E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/8	0.5 - 0.54	5.4E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/8	0.5 - 0.54	5.4E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/8	0.5 - 0.54	5.4E-01	N/A	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/8	0.25 - 0.27	2.7E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	3.7E-02 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	3.7E-02 C	2.0E-02	NC2LGW	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	4.2E-03 C	2.0E-03	NC2LGW	YES	DLASL

TABLE H 2.14
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	959-98-8	Endosulfan I	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	6.1E-02 C	2.0E-01	MCL	NO	DLBSL
												3.0E-02	NC2LGW		
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	1.5E-02 C	4.0E-01	MCL	YES	DLASL
												8.0E-03	NC2LGW		
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/8	0.025 - 0.027	2.7E-02	N/A	7.4E-03 C*	2.0E-01	MCL	YES	DLASL
												4.0E-03	NC2LGW		
	72-43-5	Methoxychlor	ND	ND	UG/L		0/8	0.1 - 0.11	1.1E-01	N/A	1.8E+01 N	4.0E+01	MCL, N2CLGW	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/8	0.25 - 0.27	2.7E-01	N/A	6.1E-02 C	3.0E+00	MCL	YES	DLASL
												3.0E-02	NC2LGW		
	7429-90-5	Aluminum	1.5E+02 J	1.3E+03	UG/L	IR86-GW64-09D	4/7	200 - 200	1.3E+03	1.9E+03	3.7E+03 N	N/A	N/A	NO	BSL
	7440-36-0	**Antimony**	**3.4E+00 J**	**3.4E+00 J**	**UG/L**	**IR86-GW58-09D**	**1/7**	**10 - 10**	**3.4E+00**	**3.3E+00**	**1.5E+00 N**	**6.0E+00**	**MCL**	**YES**	**ASL**
	7440-38-2	Arsenic	3.4E+00 J	3.4E+00 J	UG/L	IR86-GW62-09D	1/7	10 - 10	3.4E+00	5.8E+00	4.5E-02 C	1.0E+01	MCL, N2CLGW	NO	BBL
	7440-39-3	Barium	1.2E+01 J	7.1E+01	UG/L	IR86-GW62-09D	7/7	20 - 20	7.1E+01	8.6E+01	7.3E+02 N	2.0E+03	MCL	NO	BSL
												7.0E+02	NC2LGW		
	7440-41-7	Beryllium	ND	ND	UG/L		0/7	4 - 4	4.0E+00	3.1E-01	7.3E+00 N	N/A	N/A	NO	DLBSL
	7440-43-9	Cadmium	ND	ND	UG/L		0/7	2 - 2	2.0E+00	3.6E-01	1.8E+00 N	5.0E+00	MCL	YES	DLASL
												2.0E+00	NC2LGW		
	7440-70-2	Calcium	5.8E+04	2.9E+05	UG/L	IR86-GW60-09D	7/7	5000 - 5000	2.9E+05	6.9E+04	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	2.7E+00 J	2.7E+00 J	UG/L	IR86-GW58-09D	1/7	5 - 5	2.7E+00	3.1E+00	4.3E-02 C	1.0E+02	MCL	NO	BBL
												1.0E+01	N2CLGW		
	7440-48-4	Cobalt	ND	ND	UG/L		0/7	25 - 25	2.5E+01	3.4E+00	1.1E+00 N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	2.4E+00 J	3.0E+00 J	UG/L	IR86-GW60-09D	2/7	5 - 5	3.0E+00	2.8E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	NC2LGW		
	7439-89-6	**Iron**	**3.6E+02**	**1.1E+04**	**UG/L**	**IR86-GW58-09D**	**8/8**	**100 - 100**	**1.1E+04**	**6.0E+03**	**2.6E+03 N**	**3.0E+02**	**NC2LGW**	**YES**	**ASL**
	7439-92-1	Lead	3.4E+00 J	6.8E+00 J	UG/L	IR86-GW58-09D	4/7	10 - 10	6.8E+00	2.8E+00	N/A	1.5E+01	MCL, N2CLGW	NO	NTX
	7439-95-4	Magnesium	3.5E+03 J	6.9E+03	UG/L	IR86-GW60-09D	6/7	5000 - 5000	6.9E+03	6.4E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	1.3E+01 J	1.7E+02	UG/L	IR86-GW58-09D	8/8	15 - 15	1.7E+02	2.1E+02	8.8E+01 N	5.0E+01	NC2LGW	NO	BBL
	7439-97-6	Mercury	ND	ND	UG/L		0/1	0.1 - 0.1	1.0E-01	1.0E-01	1.1E+00 N	2.0E+00	MCL	NO	DLBSL
												1.0E+00	NC2LGW		
	7440-02-0	Nickel	ND	ND	UG/L		0/7	40 - 40	4.0E+01	8.0E+00	7.3E+01 N	1.0E+02	NC2LGW	NO	DLBSL
	7440-09-7	Potassium	2.0E+03 J	3.0E+03 J	UG/L	IR86-GW58-09D	6/7	5000 - 5000	3.0E+03	3.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/7	10 - 10	1.0E+01	3.1E+00	1.8E+01 N	5.0E+01	MCL	NO	DLBSL
												2.0E+01	NC2LGW		

TABLE H 2.14

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-22-4	Silver	1.7E+00 J	2.3E+00 J	UG/L	IR86-GW56-09D : IR86-GW59D-09D	6/7	5 - 5	2.3E+00	7.7E-01	1.8E+01 N	2.0E+01	NC2LGW	NO	BSL
	7440-23-5	Sodium	5.7E+03 J	2.8E+04 J	UG/L	IR86-GW58-09D	7/7	5000 - 5000	2.8E+04	2.3E+04	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	UG/L		0/7	50 - 50	5.0E+01	3.8E+00	N/A	2.0E+00	MCL	NO	NTX
	7440-62-2	Vanadium	ND	ND	UG/L		0/7	50 - 50	5.0E+01	4.7E+00	1.8E+01 N	N/A	N/A	YES	DLASL
	7440-66-6	Zinc	6.4E+00 J	9.0E+00 J	UG/L	IR86-GW58-09D	2/7	20 - 20	9.0E+00	4.2E+01	1.1E+03 N	1.0E+03	NC2LGW	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean shallow groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Level (BBL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Upper Castle-	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
Hayne	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
Groundwater	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	DLBSL
Tap Water	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
	75-34-3	1,1-Dichloroethane	2.5E-01 J	1.5E+00	UG/L	86-GW38IWB-09D : IR86-GW38IWC-0	4/23	1 - 1	1.5E+00	N/A	2.4E+00 C	7.0E+00	MCL	NO	BSL
												6.0E+00	NC2LGW		
	75-35-4	1,1-Dichloroethene	4.5E-01 J	1.3E+01	UG/L	86-GW55IW-09D : IR86-GW55IWD-09	10/23	1 - 1	1.3E+01	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	BSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/10	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	4.7E+00 N	2.8E+02	NC2LGW	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	4.3E+00 J	4.3E+00 J	UG/L	IR86-GW59IW-09D	1/23	10 - 10	4.3E+00	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	BSL
	71-43-2	**Benzene**	**1.2E-01 J**	**4.0E+00**	**UG/L**	**IR86-GW15IW-09D**	**14/23**	**1 - 1**	**4.0E+00**	**N/A**	**4.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												1.0E+00	**NC2LGW**		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	75-25-2	Bromoform	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	8.5E+00 C*	8.0E+01	MCL	NO	DLBSL
												4.0E+00	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	2.1E-01 J	2.1E-01 J	UG/L	IR86-GW59IW-09D	1/23	1 - 1	2.1E-01	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**9.8E-01 J**	**9.8E-01 J**	**UG/L**	**IR86-GW61IW-09D**	**1/23**	**1 - 1**	**9.8E-01**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	3.5E-01 J	3.5E-01 J	UG/L	IR86-GW34IW-09D	1/23	1 - 1	3.5E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	**cis-1,2-Dichloroethene**	**5.1E-01 J**	**3.5E+02 J**	**UG/L**	**IR86-GW15IW-09D**	**18/23**	**1 - 2**	**3.5E+02**	**N/A**	**7.3E+00 N**	**7.0E+01**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	3.9E+01 N	1.0E+03	NC2LGW	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	NC2LGW		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	6.8E+01 N	5.0E+00	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.3E+01 C	2.0E+01	NC2LGW	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**2.8E-01 J**	**2.8E-01 J**	**UG/L**	**IR86-GW31IW-09D**	**1/23**	**1 - 1**	**2.8E-01**	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	1.7E-01 J	1.1E+00	UG/L	IR86-GW42IW-09D	15/23	1 - 1	1.1E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	**trans-1,2-Dichloroethene**	**1.4E-01 J**	**1.6E+01**	**UG/L**	**IR86-GW55IW-09D**	**11/23**	**1 - 1**	**1.6E+01**	**N/A**	**1.1E+01 N**	**1.0E+02**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	**Trichloroethene**	**2.8E-01 J**	**7.1E+02**	**UG/L**	**IR86-GW58IW-09D**	**13/23**	**0.5 - 2.5**	**7.1E+02**	**N/A**	**2.0E+00 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E+00	NC2LGW		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	**Vinyl chloride**	**4.0E-01 J**	**1.4E+02**	**UG/L**	**IR86-GW55IWD-09D**	**10/23**	**0.5 - 0.5**	**1.4E+02**	**N/A**	**1.6E-02 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E-02	**NC2LGW**		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	2.0E+01 N	2.0E+00	MCL	NO	DLBSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	95-95-4	2,4,5-Trichlorophenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	88-06-2	2,4,6-Trichlorophenol	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	120-83-2	2,4-Dichlorophenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	105-67-9	2,4-Dimethylphenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	7.3E+01 N	N/A	N/A	NO	DLBSL
	51-28-5	2,4-Dinitrophenol	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	7.3E+00 N	N/A	N/A	NO	DLBSL

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	121-14-2	2,4-Dinitrotoluene	ND	ND	UG/L		0/5	2 - 2.2	2.2E+00	N/A	2.2E-01 C	N/A	N/A	YES	DLASL
	606-20-2	2,6-Dinitrotoluene	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+00 N	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	95-48-7	2-Methylphenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.8E+02 N	N/A	N/A	NO	DLBSL
	88-74-4	2-Nitroaniline	ND	ND	UG/L		0/5	2 - 2.2	2.2E+00	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	91-94-1	3,3'-Dichlorobenzidine	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.5E-01 C	N/A	N/A	YES	DLASL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	534-52-1	4,6-Dinitro-2-methylphenol	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E-01 N	N/A	N/A	YES	DLASL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	106-47-8	4-Chloroaniline	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	3.4E-01 C	N/A	N/A	YES	DLASL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	106-44-5	4-Methylphenol	ND	ND	UG/L		0/5	2 - 2.2	2.2E+00	N/A	1.8E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	100-01-6	4-Nitroaniline	ND	ND	UG/L		0/5	2 - 2.2	2.2E+00	N/A	3.4E+00 C*	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	208-96-8	Acenaphthylene	2.3E-01	2.3E-01	UG/L	R86-GW60IW-09D : IR86-GW63IW-09I	2/5	0.2 - 0.22	2.3E-01	N/A	2.2E+02 N	2.0E+02	NC2LGW	NO	BSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL
	1912-24-9	Atrazine	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	2.9E-01 C	3.0E+00	MCL, N2CLGW	YES	DLASL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	56-55-3	Benzo(a)anthracene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.9E-02 C	5.0E-02	NC2LGW	YES	DLASL
	50-32-8	Benzo(a)pyrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01		2.9E-03 C	2.0E-01	MCL	YES	DLASL
												5.0E-03	NC2LGW		
	205-99-2	**Benzo(b)fluoranthene**	**1.1E-01 J**	**1.1E-01 J**	**UG/L**	**IR86-GW60IW-09D**	**1/5**	**0.2 - 0.22**	**1.1E-01**	**N/A**	**2.9E-02 C**	**5.0E-02**	**NC2LGW**	**YES**	**ASL**
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.9E-01 C	5.0E-01	NC2LGW	NO	DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.1E+01 N	N/A	N/A	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	4.8E+00 C	6.0E+00	MCL	YES	DLASL
												3.0E+00	NC2LGW		
	85-68-7	Butylbenzylphthalate	ND	ND	UG/L		0/5	2 - 2.2	2.2E+00	N/A	3.5E+01 C	1.0E+03	NC2LGW	NO	DLBSL
	105-60-2	Caprolactam	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	1.8E+03 N	4.0E+03	NC2LGW	NO	DLBSL
	86-74-8	Carbazole	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	218-01-9	Chrysene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.9E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.9E-03 C	5.0E-03	NC2LGW	YES	DLASL

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	84-66-2	Diethylphthalate	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	2.9E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	N/A	N/A	N/A	NO	NTX
	84-74-2	Di-n-butylphthalate	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	3.7E+02 N	7.0E+02	NC2LGW	NO	DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	4.8E+00 C	1.0E+02	NC2LGW	NO	DLBSL
	206-44-0	Fluoranthene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	DLBSL
	86-73-7	Fluorene	1.0E-01 J	1.0E-01 J	UG/L	IR86-GW60IW-09D	1/5	0.2 - 0.22	1.0E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	BSL
	118-74-1	Hexachlorobenzene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	4.2E-02 C	1.0E+00	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	87-68-3	Hexachlorobutadiene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	8.6E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	2.2E+01 N	5.0E+01	N/A	NO	DLBSL
	67-72-1	Hexachloroethane	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	3.7E+00 C**	N/A	N/A	YES	DLASL
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.9E-02 C	5.0E-02	NC2LGW	YES	DLASL
	78-59-1	Isophorone	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	7.1E+01 C	4.0E+01	NC2LGW	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.4E-01 C*	6.0E+00	NC2LGW	YES	DLASL
	621-64-7	n-Nitroso-di-n-propylamine	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	9.6E-03 C	N/A	N/A	YES	DLASL
	86-30-6	n-Nitrosodiphenylamine	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.4E+01 C	7.0E-04	NC2LGW	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	87-86-5	Pentachlorophenol	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.7E-01 C	1.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	85-01-8	Phenanthrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	108-95-2	Phenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.1E+03 N	3.0E+01	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	72-54-8	4,4'-DDD	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.8E-01 C	1.0E-01	NC2LGW	NO	DLBSL
	72-55-9	4,4'-DDE	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.0E-01 C	N/A	N/A	NO	DLBSL
	50-29-3	4,4'-DDT	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.0E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	309-00-2	Aldrin	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	4.0E-03 C	N/A	N/A	YES	DLASL
	319-84-6	alpha-BHC	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.1E-02 C	2.0E-02	NC2LGW	YES	DLASL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	12674-11-2	Aroclor-1016	ND	ND	UG/L		0/5	0.25 - 0.26	2.6E-01	N/A	2.6E-01 C**	N/A	N/A	YES	DLASL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/5	0.5 - 0.53	5.3E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/5	0.6 - 0.63	6.3E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	53469-21-9	Aroclor-1242	ND	ND	UG/L		0/5	0.5 - 0.53	5.3E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	12672-29-6	Aroclor-1248	ND	ND	UG/L		0/5	0.5 - 0.53	5.3E-01	N/A	3.4E-02 C	N/A	N/A	YES	DLASL
	11097-69-1	Aroclor-1254	ND	ND	UG/L		0/5	0.5 - 0.53	5.3E-01	N/A	3.4E-02 C*	5.0E-01	MCL	YES	DLASL
	11096-82-5	Aroclor-1260	ND	ND	UG/L		0/5	0.25 - 0.26	2.6E-01	N/A	3.4E-02 C	5.0E-01	MCL	YES	DLASL
	319-85-7	beta-BHC	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	3.7E-02 C	N/A	N/A	NO	DLBSL
	319-86-8	delta-BHC	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	3.7E-02 C	2.0E-02	NC2LGW	NO	DLBSL
	60-57-1	Dieldrin	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	4.2E-03 C	2.0E-03	NC2LGW	YES	DLASL

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	959-98-8	Endosulfan I	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	33213-65-9	Endosulfan II	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	2.2E+01 N	4.0E+01	NC2LGW	NO	DLBSL
	72-20-8	Endrin	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	53494-70-5	Endrin ketone	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.1E+00 N	2.0E+00	MCL, N2CLGW	NO	DLBSL
	58-89-9	gamma-BHC (Lindane)	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	6.1E-02 C	2.0E-01	MCL	NO	DLBSL
												3.0E-02	NC2LGW		
	5103-74-2	gamma-Chlordane	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	76-44-8	Heptachlor	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.5E-02 C	4.0E-01	MCL	YES	DLASL
												8.0E-03	NC2LGW		
	1024-57-3	Heptachlor epoxide	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	7.4E-03 C*	2.0E-01	MCL	YES	DLASL
												4.0E-03	NC2LGW		
	72-43-5	Methoxychlor	ND	ND	UG/L		0/5	0.1 - 0.11	1.1E-01	N/A	1.8E+01 N	4.0E+01	MCL, N2CLGW	NO	DLBSL
	8001-35-2	Toxaphene	ND	ND	UG/L		0/5	0.25 - 0.26	2.6E-01	N/A	6.1E-02 C	3.0E+00	MCL	YES	DLASL
												3.0E-02	NC2LGW		
	7429-90-5	Aluminum	3.4E+02	3.4E+02	UG/L	IR86-GW59IW-09D	1/4	200 - 200	3.4E+02	8.0E+03	3.7E+03 N	N/A	N/A	NO	BSL
	7440-36-0	Antimony	3.2E+00 J	3.2E+00 J	UG/L	IR86-GW59IW-09D	1/4	10 - 10	3.2E+00	3.2E+00	1.5E+00 N	6.0E+00	MCL	NO	BSL
	7440-38-2	Arsenic	ND	ND	UG/L		0/4	10 - 10	1.0E+01	5.2E+00	4.5E-02 C	1.0E+01	MCL, N2CLGW	YES	DLASL
	7440-39-3	Barium	1.7E+01 J	3.2E+01	UG/L	IR86-GW60IW-09D	4/4	20 - 20	3.2E+01	8.9E+01	7.3E+02 N	2.0E+03	MCL	NO	BSL
												7.0E+02	NC2LGW		
	7440-41-7	Beryllium	ND	ND	UG/L		0/4	4 - 4	4.0E+00	7.8E-01	7.3E+00 N	N/A	N/A	NO	DLBSL
	7440-43-9	Cadmium	ND	ND	UG/L		0/4	2 - 2	2.0E+00	4.6E-01	1.8E+00 N	5.0E+00	MCL	YES	DLASL
												2.0E+00	NC2LGW		
	7440-70-2	Calcium	6.9E+04	1.5E+05	UG/L	IR86-GW63IW-09D	4/4	5000 - 5000	1.5E+05	1.0E+05	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	ND	ND	UG/L		0/4	5 - 5	5.0E+00	1.4E+01	4.3E-02 C	1.0E+02	MCL	YES	DLASL
												1.0E+01	N2CLGW		
	7440-48-4	Cobalt	ND	ND	UG/L		0/4	25 - 25	2.5E+01	6.0E+00	1.1E+00 N	N/A	N/A	YES	DLASL
	7440-50-8	Copper	1.6E+00 J	1.6E+00 J	UG/L	R86-GW58IW-09D : IR86-GW60IW-09I	2/4	5 - 5	1.6E+00	9.4E+00	1.5E+02 N	1.3E+03	MCL	NO	BSL
												1.0E+03	NC2LGW		
	7439-89-6	Iron	1.3E+03	3.6E+03	UG/L	IR86-GW58IW-09D	4/4	100 - 100	3.6E+03	1.6E+04	2.6E+03 N	3.0E+02	NC2LGW	NO	BBL
	7439-92-1	Lead	4.1E+00 J	7.0E+00 J	UG/L	IR86-GW60IW-09D	4/4	10 - 10	7.0E+00	1.0E+01	N/A	1.5E+01	MCL, N2CLGW	NO	NTX
	7439-95-4	Magnesium	3.1E+03 J	3.8E+03 J	UG/L	IR86-GW63IW-09D	3/4	5000 - 5000	3.8E+03	7.3E+03	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.8E+01	5.8E+01	UG/L	R86-GW60IW-09D : IR86-GW63IW-09I	4/4	15 - 15	5.8E+01	2.7E+02	8.8E+01 N	5.0E+01	NC2LGW	NO	BSL
	7440-02-0	Nickel	ND	ND	UG/L		0/4	40 - 40	4.0E+01	6.2E+00	7.3E+01 N	1.0E+02	NC2LGW	NO	DLBSL
	7440-09-7	Potassium	2.0E+03 J	6.8E+03	UG/L	IR86-GW59IW-09D	3/4	5000 - 5000	6.8E+03	4.3E+03	N/A	N/A	N/A	NO	NUT
	7782-49-2	Selenium	ND	ND	UG/L		0/4	10 - 10	1.0E+01	3.2E+00	1.8E+01 N	5.0E+01	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	7440-22-4	Silver	2.1E+00 J	2.5E+00 J	UG/L	IR86-GW58IW-09D	3/4	5 - 5	2.5E+00	7.0E-01	1.8E+01 N	2.0E+01	NC2LGW	NO	BSL
	7440-23-5	Sodium	1.2E+04 J	1.9E+04 J	UG/L	IR86-GW58IW-09D	4/4	5000 - 5000	1.9E+04	3.2E+04	N/A	N/A	N/A	NO	NUT

TABLE H 2.15

Occurrence, Distribution and Selection of ChemicaLs of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7440-28-0	Thallium	ND	ND	UG/L		0/4	50 - 50	5.0E+01	3.5E+00	N/A	2.0E+00	MCL	NO	NTX
	7440-62-2	Vanadium	ND	ND	UG/L		0/4	50 - 50	5.0E+01	1.7E+01	1.8E+01 N	N/A	N/A	YES	DLASL
	7440-66-6	Zinc	1.8E+01 J	1.8E+01 J	UG/L	IR86-GW59IW-09D	1/4	20 - 20	1.8E+01	6.5E+01	1.1E+03 N	1.0E+03	NC2LGW	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean deep groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for technical chlordane used as surrogate for alpha-chlordane.
RSL value for technical-HCH used as surrogate for delta-BHC.
RSL value for technical chlordane used as surrogate for gamma-chlordane.
RSL value for Manganese (water) used as surrogate for manganese.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for endosulfan used as surrogate for endosulfan I, endosulfan II, and endosulfan sulfate.
RSL value for endrin used as surrogate for endrin aldehyde and endrin ketone.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Level (BBL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.16

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surficial	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
Groundwater	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
Water Vapors at	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	1.5E+00	6.2E+02	UG/L	IR86-GW10IW-09D	3/24	1 - 4	6.2E+02	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	BSL
Showerhead and	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
Excavation Pit	**75-34-3**	**1,1-Dichloroethane**	**1.9E-01 J**	**3.4E+00**	**UG/L**	**IR86-GW10IW-09D**	**9/24**	**1 - 1**	**3.4E+00**	**N/A**	**2.4E+00 C**	**7.0E+00**	**MCL**	**YES**	**ASL**
												6.0E+00	**NC2LGW**		
	75-35-4	1,1-Dichloroethene	2.7E-01 J	4.0E+00	UG/L	IR86-GW61-09D	7/24	1 - 1	4.0E+00	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	BSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/13	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	**2-Hexanone**	**1.4E+01**	**1.4E+01**	**UG/L**	**IR86-GW63-10A**	**1/24**	**5 - 5**	**1.4E+01**	**N/A**	**4.7E+00 N**	**4.0E+02**	**NC2LGW**	**YES**	**ASL**
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/24	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/24	10 - 10	1.0E+01	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	71-43-2	**Benzene**	**1.1E-01 J**	**1.1E+01**	**UG/L**	**IR86-GW52-09D**	**14/24**	**1 - 1**	**1.1E+01**	**N/A**	**4.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												1.0E+00	**NC2LGW**		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	6.0E-01 J	6.0E-01 J	UG/L	IR86-GW39-10A	1/24	1 - 1	6.0E-01	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.16

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**4.4E-01 J**	**2.0E+00 J**	**UG/L**	**IR86-GW58-09D**	**4/24**	**1 - 1**	**2.0E+00**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	3.0E-01 J	3.0E-01 J	UG/L	IR86-GW52-09D	1/24	1 - 1	3.0E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	**cis-1,2-Dichloroethene**	**2.2E-01 J**	**1.5E+02 J**	**UG/L**	**IR86-GW58-09D**	**16/24**	**1 - 1**	**1.5E+02**	**N/A**	**7.3E+00 N**	**7.0E+01**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	6.1E-01 J	3.2E+01	UG/L	IR86-GW27IW-09D	5/24	1 - 1	3.2E+01	N/A	1.3E+03 N	N/A	N/A	NO	BSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	**Dichlorodifluoromethane (Freon-12)**	**1.4E+00**	**5.1E+01**	**UG/L**	**IR86-GW10IW-09D**	**4/24**	**1 - 1**	**5.1E+01**	**N/A**	**4.0E+01 N**	**1.0E+03**	**NC2LGW**	**YES**	**ASL**
	100-41-4	**Ethylbenzene**	**3.8E-01 J**	**4.6E+00**	**UG/L**	**IR86-GW52-09D**	**4/24**	**1 - 1**	**4.6E+00**	**N/A**	**1.5E+00 C**	**7.0E+02**	**MCL**	**YES**	**ASL**
												6.0E+02	**NC2LGW**		
	98-82-8	Isopropylbenzene	1.2E-01 J	4.6E-01 J	UG/L	IR86-GW52-09D	2/24	1 - 1	4.6E-01	N/A	6.8E+01 N	5.0E+00	MCL	NO	BSL
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	2.6E+00 J	4.1E+00 J	UG/L	IR86-GW47-09D	2/24	5 - 5	4.1E+00	N/A	N/A	8.8E+01	N	NO	NTX
	75-09-2	Methylene chloride	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	**Methyl-tert-butyl ether (MTBE)**	**6.6E+01**	**6.6E+01**	**UG/L**	**IR86-GW39-10A**	**1/24**	**1 - 1**	**6.6E+01**	**N/A**	**1.3E+01 C**	**2.0E+01**	**NC2LGW**	**YES**	**ASL**
	100-42-5	Styrene	ND	ND	UG/L		0/24	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**1.9E+02**	**1.9E+02**	**UG/L**	**IR86-GW10IW-09D**	**1/24**	**1 - 1**	**1.9E+02**	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	1.9E-01 J	5.1E+00	UG/L	IR86-GW52-09D	5/24	1 - 1	5.1E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	trans-1,2-Dichloroethene	2.2E-01 J	3.7E+00 J	UG/L	IR86-GW58-09D	5/24	1 - 1	3.7E+00	N/A	1.1E+01 N	1.0E+02	MCL, N2CLGW	NO	BSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	**Trichloroethene**	**5.3E-01**	**2.6E+02**	**UG/L**	**IR86-GW61-09D**	**14/24**	**0.5 - 0.5**	**2.6E+02**	**N/A**	**2.0E+00 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E+00	**NC2LGW**		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/24	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	**Vinyl chloride**	**1.1E+00**	**6.8E+01 J**	**UG/L**	**IR86-GW58-09D**	**3/24**	**0.5 - 0.5**	**6.8E+01**	**N/A**	**1.6E-02 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E-02	**NC2LGW**		
	1330-20-7	Xylene, total	6.3E+00	6.8E+00	UG/L	IR86-GW52-09D	2/24	0.5 - 0.5	6.8E+00	N/A	2.0E+01 N	2.0E+00	MCL	NO	BSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL

TABLE H 2.16

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	59-50-7	4-Chloro-3-methylphenol	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	208-96-8	Acenaphthylene	2.6E-01	3.0E-01	UG/L	IR86-GW56-09D	3/8	0.2 - 0.22	3.0E-01	N/A	2.2E+02 N	2.0E+02	NC2LGW	NO	BSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/8	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/7	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	DLBSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	86-74-8	Carbazole	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/8	5 - 5.6	5.6E+00	N/A	N/A	N/A	N/A	NO	NTX
	117-84-0	Di-n-octylphthalate	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	4.8E+00 C	1.0E+02	NC2LGW	NO	DLBSL
	86-73-7	Fluorene	1.2E-01 J	1.2E-01 J	UG/L	IR86-GW60-09D : IR86-GW61-09D	2/8	0.2 - 0.22	1.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	BSL
	91-20-3	**Naphthalene**	**1.9E-01 J**	**1.9E-01 J**	**UG/L**	**IR86-GW58-09D**	**1/8**	**0.2 - 0.22**	**1.9E-01**	**N/A**	**1.4E-01 C***	**6.0E+00**	**NC2LGW**	**YES**	**ASL**
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/8	1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	85-01-8	Phenanthrene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/8	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/8	0.5 - 0.54	5.4E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/8	0.6 - 0.65	6.5E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL

TABLE H 2.16

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean shallow groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). December, 2009. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.17

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Middle Castle-	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
Hayne	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
Groundwater	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	5.2E-01 J	5.2E-01 J	UG/L	IR86-GW19DW-09D	1/15	1 - 1	5.2E-01	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	BSL
Water Vapors	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
at Showerhead	75-34-3	1,1-Dichloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.4E+00 C	7.0E+00	MCL	NO	DLBSL
												6.0E+00	NC2LGW		
	75-35-4	1,1-Dichloroethene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	DLBSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	1,2-Dibromoethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	6.5E-03 C	5.0E-02	MCL	YES	DLASL
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/1	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/15	5 - 5	1.4E+01	N/A	4.7E+00 N	2.8E+02	NC2LGW	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/15	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	ND	ND	UG/L		0/15	10 - 10	1.0E+01	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	DLBSL
	71-43-2	Benzene	ND	ND	UG/L		0/15	1 - 1	1.1E+01	N/A	4.1E-01 C	5.0E+00	MCL	YES	DLASL
												1.0E+00	NC2LGW		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	3.4E+00	3.4E+00	UG/L	IR86-GW58DW-10A	1/15	1 - 1	3.4E+00	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.17

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**1.9E-01 J**	**3.8E-01 J**	**UG/L**	**IR86-GW59DW-09D**	**2/15**	**1 - 1**	3.8E-01	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	1.8E-01 J	1.8E-01 J	UG/L	86-GW58DW-10A : IR86-GW61DW-09	2/15	1 - 1	1.8E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	cis-1,2-Dichloroethene	1.3E-01 J	1.3E-01 J	UG/L	IR86-GW61DW-09D	1/15	1 - 1	1.3E-01	N/A	**7.3E+00** N	7.0E+01	MCL, N2CLGW	NO	BSL
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.0E+01 N	1.0E+03	NC2LGW	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	NC2LGW		
	98-82-8	Isopropylbenzene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	6.8E+01 N	5.0E+00	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/15	5 - 5	5.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	BSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.3E+01 C	2.0E+01	NC2LGW	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**2.4E+00**	**2.4E+00**	**UG/L**	**IR86-GW19DW-09D**	**1/15**	**1 - 1**	2.4E+00	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	2.5E-01 J	1.0E+00	UG/L	IR86-GW19DW-09D	6/15	1 - 1	1.0E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	trans-1,2-Dichloroethene	ND	ND	UG/L		0/15	1 - 1	1.0E+00	N/A	1.1E+01 N	1.0E+02	MCL, N2CLGW	NO	DLBSL
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	Trichloroethene	2.9E-01 J	2.9E-01 J	UG/L	IR86-GW61DW-09D	1/15	0.5 - 0.5	2.9E-01	N/A	2.0E+00 C	5.0E+00	MCL	NO	BSL
												3.0E+00	NC2LGW		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	Vinyl chloride	ND	ND	UG/L		0/15	0.5 - 0.5	5.0E-01	N/A	1.6E-02 C	5.0E+00	MCL	YES	DLASL
												3.0E-02	NC2LGW		
	1330-20-7	Xylene, total	2.8E-01 J	2.8E-01 J	UG/L	IR86-GW59DW-09D	1/15	0.5 - 0.5	2.8E-01	N/A	2.0E+01 N	2.0E+00	MCL	NO	BSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	100-02-7	4-Nitrophenol	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	208-96-8	Acenaphthylene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	2.0E+02	NC2LGW	NO	BSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.17

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/3	11 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	4.6E-01 J	4.6E-01 J	UG/L	IR86-GW59DW-09D	1/4	0.2 - 0.22	4.6E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	BSL
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	86-74-8	Carbazole	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/3	5.3 - 5.6	5.6E+00	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	DLBSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.4E-01 C*	6.0E+00	NC2LGW	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/3	1.1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	85-01-8	Phenanthrene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/4	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/4	0.025 - 0.027	2.7E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/4	0.5 - 0.55	5.5E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/4	0.6 - 0.66	6.6E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean shallow groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively

Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 2.18

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Upper Castle-	71-55-6	1,1,1-Trichloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	9.1E+02 N	2.0E+02	MCL, N2CLGW	NO	DLBSL
Hayne	79-34-5	1,1,2,2-Tetrachloroethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	6.7E-02 C	2.0E-01	NC2LGW	YES	DLASL
Groundwater	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	5.9E+03 N	2.0E+05	NC2LGW	NO	DLBSL
Water Vapors	79-00-5	1,1,2-Trichloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	2.4E-01 C	5.0E+00	MCL	YES	DLASL
at Showerhead	75-34-3	1,1-Dichloroethane	2.5E-01 J	1.5E+00	UG/L	86-GW38IWB-09D : IR86-GW38IWC-09	4/23	1 - 1	1.5E+00	N/A	2.4E+00 C	7.0E+00	MCL	NO	BSL
												6.0E+00	NC2LGW		
	75-35-4	1,1-Dichloroethene	4.5E-01 J	1.3E+01	UG/L	86-GW55IW-09D : IR86-GW55IWD-09	10/23	1 - 1	1.3E+01	N/A	3.4E+01 N	7.0E+00	NC2LGW	NO	BSL
	120-82-1	1,2,4-Trichlorobenzene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.1E-01 C**	7.0E+01	MCL, N2CLGW	YES	DLASL
	96-12-8	1,2-Dibromo-3-chloropropane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	3.2E-04 C	2.0E-01	MCL	YES	DLASL
												4.0E-02	NC2LGW		
	106-93-4	**1,2-Dibromoethane**	**ND**	**ND**	**UG/L**		**0/23**	**0.5 - 0.5**	**5.0E-01**	**N/A**	**6.5E-03 C**	**5.0E-02**	**MCL**	**YES**	**DLASL**
												2.0E-02	NC2LGW		
	95-50-1	1,2-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	3.7E+01 N	6.0E+02	MCL	NO	DLBSL
												2.0E+01	NC2LGW		
	107-06-2	1,2-Dichloroethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	5.0E+00	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	78-87-5	1,2-Dichloropropane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	3.9E-01 C*	5.0E+00	MCL	YES	DLASL
												6.0E-01	NC2LGW		
	541-73-1	1,3-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.3E-01 C	2.0E+02	NC2LGW	YES	DLASL
	106-46-7	1,4-Dichlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.3E-01 C	7.5E+01	MCL	YES	DLASL
												6.0E+00	NC2LGW		
	78-93-3	2-Butanone	ND	ND	UG/L		0/10	10 - 10	1.0E+01	N/A	7.1E+02 N	4.0E+03	NC2LGW	NO	DLBSL
	591-78-6	2-Hexanone	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	4.7E+00 N	2.8E+02	NC2LGW	YES	DLASL
	108-10-1	4-Methyl-2-pentanone	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	2.0E+02 N	N/A	N/A	NO	DLBSL
	67-64-1	Acetone	4.3E+00 J	4.3E+00 J	UG/L	IR86-GW59IW-09D	1/23	10 - 10	4.3E+00	N/A	2.2E+03 N	6.0E+03	NC2LGW	NO	BSL
	71-43-2	**Benzene**	**1.2E-01 J**	**4.0E+00**	**UG/L**	**IR86-GW15IW-09D**	**14/23**	**1 - 1**	**4.0E+00**	**N/A**	**4.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												1.0E+00	**NC2LGW**		
	75-27-4	Bromodichloromethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.2E-01 C	8.0E+01	MCL	YES	DLASL
												6.0E-02	NC2LGW		
	74-83-9	Bromomethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	8.7E-01 N	N/A	N/A	YES	DLASL
	75-15-0	Carbon disulfide	2.1E-01 J	2.1E-01 J	UG/L	IR86-GW59IW-09D	1/23	1 - 1	2.1E-01	N/A	1.0E+02 N	7.0E+02	NC2LGW	NO	BSL
	56-23-5	Carbon tetrachloride	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.4E-01 C	5.0E+00	MCL	YES	DLASL
												3.0E-01	NC2LGW		
	108-90-7	Chlorobenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	9.1E+00 N	1.0E+02	MCL	NO	DLBSL
												5.0E+01	NC2LGW		
	75-00-3	Chloroethane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	2.1E+03 N	3.0E+03	NC2LGW	NO	DLBSL

TABLE H 2.18

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	67-66-3	**Chloroform**	**9.8E-01 J**	**9.8E-01 J**	**UG/L**	**IR86-GW61IW-09D**	**1/23**	**1 - 1**	**9.8E-01**	**N/A**	**1.9E-01 C**	**8.0E+01**	**MCL**	**YES**	**ASL**
												7.0E+01	**NC2LGW**		
	74-87-3	Chloromethane	3.5E-01 J	3.5E-01 J	UG/L	IR86-GW34IW-09D	1/23	1 - 1	3.5E-01	N/A	1.9E+01 N	3.0E+00	NC2LGW	NO	BSL
	156-59-2	**cis-1,2-Dichloroethene**	**5.1E-01 J**	**3.5E+02 J**	**UG/L**	**IR86-GW15IW-09D**	**18/23**	**1 - 2**	**3.5E+02**	**N/A**	**7.3E+00 N**	**7.0E+01**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-01-5	cis-1,3-Dichloropropene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	110-82-7	Cyclohexane	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.3E+03 N	N/A	N/A	NO	DLBSL
	124-48-1	Dibromochloromethane	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.5E-01 C	8.0E+01	MCL	YES	DLASL
												4.0E-01	NC2LGW		
	75-71-8	Dichlorodifluoromethane (Freon-12)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.0E+01 N	1.0E+03	NC2LGW	NO	DLBSL
	100-41-4	Ethylbenzene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.5E+00 C	7.0E+02	MCL	NO	DLBSL
												6.0E+02	NC2LGW		
	98-82-8	**Isopropylbenzene**	**ND**	**ND**	**UG/L**		**0/23**	**1 - 1**	**1.0E+00**	**N/A**	**6.8E+01 N**	**5.0E+00**	**MCL**	**NO**	**DLBSL**
												7.0E+01	NC2LGW		
	79-20-9	Methyl acetate	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	3.7E+03 N	N/A	N/A	NO	DLBSL
	108-87-2	Methylcyclohexane	ND	ND	UG/L		0/23	5 - 5	5.0E+00	N/A	8.8E+01 N	N/A	N/A	NO	DLBSL
	75-09-2	Methylene chloride	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	4.8E+00 C	5.0E+00	NC2LGW	NO	DLBSL
	1634-04-4	Methyl-tert-butyl ether (MTBE)	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.3E+01 C	2.0E+01	NC2LGW	NO	DLBSL
	100-42-5	Styrene	ND	ND	UG/L		0/23	1 - 1	1.0E+00	N/A	1.6E+02 N	1.0E+02	MCL	NO	DLBSL
												7.0E+01	NC2LGW		
	127-18-4	**Tetrachloroethene**	**2.8E-01 J**	**2.8E-01 J**	**UG/L**	**IR86-GW31IW-09D**	**1/23**	**1 - 1**	**2.8E-01**	**N/A**	**1.1E-01 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												7.0E-01	**NC2LGW**		
	108-88-3	Toluene	1.7E-01 J	1.1E+00	UG/L	IR86-GW42IW-09D	15/23	1 - 1	1.1E+00	N/A	2.3E+02 N	1.0E+03	MCL	NO	BSL
												6.0E+02	NC2LGW		
	156-60-5	**trans-1,2-Dichloroethene**	**1.4E-01 J**	**1.6E+01**	**UG/L**	**IR86-GW55IW-09D**	**11/23**	**1 - 1**	**1.6E+01**	**N/A**	**1.1E+01 N**	**1.0E+02**	**MCL, N2CLGW**	**YES**	**ASL**
	10061-02-6	trans-1,3-Dichloropropene	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	4.3E-01 C*	4.0E-01	NC2LGW	YES	DLASL
	79-01-6	**Trichloroethene**	**2.8E-01 J**	**7.1E+02**	**UG/L**	**IR86-GW58IW-09D**	**13/23**	**0.5 - 2.5**	**7.1E+02**	**N/A**	**2.0E+00 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E+00	NC2LGW		
	75-69-4	Trichlorofluoromethane(Freon-11)	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	1.3E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	75-01-4	**Vinyl chloride**	**4.0E-01 J**	**1.4E+02**	**UG/L**	**IR86-GW55IWD-09D**	**10/23**	**0.5 - 0.5**	**1.4E+02**	**N/A**	**1.6E-02 C**	**5.0E+00**	**MCL**	**YES**	**ASL**
												3.0E-02	**NC2LGW**		
	1330-20-7	Xylene, total	ND	ND	UG/L		0/23	0.5 - 0.5	5.0E-01	N/A	2.0E+01 N	2.0E+00	MCL	NO	DLBSL
												5.0E+02	NC2LGW		
	92-52-4	1,1-Biphenyl	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.8E+02 N	4.0E+02	NC2LGW	NO	DLBSL
	108-60-1	2,2'-Oxybis(1-chloropropane)	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.2E-01 C	N/A	N/A	YES	DLASL
	91-58-7	2-Chloronaphthalene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	2.9E+02 N	N/A	N/A	NO	DLBSL
	95-57-8	2-Chlorophenol	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.8E+01 N	4.0E-01	NC2LGW	NO	DLBSL
	91-57-6	2-Methylnaphthalene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.5E+01 N	3.0E+01	NC2LGW	NO	DLBSL
	88-75-5	2-Nitrophenol	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	99-09-2	3-Nitroaniline	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+01 N	N/A	N/A	NO	DLBSL
	101-55-3	4-Bromophenyl-phenylether	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	7005-72-3	4-Chlorophenyl-phenylether	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	1.8E+01 N	N/A	N/A	NO	DLBSL
	83-32-9	Acenaphthene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	2.2E+02 N	8.0E+01	NC2LGW	NO	DLBSL
	98-86-2	Acetophenone	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	120-12-7	Anthracene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+03	NC2LGW	NO	DLBSL
	100-52-7	Benzaldehyde	ND	ND	UG/L		0/5	10 - 11	1.1E+01	N/A	3.7E+02 N	N/A	N/A	NO	DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+02	NC2LGW	NO	DLBSL

TABLE H 2.18

Occurrence, Distribution and Selection of Chemicals of Potential Concern

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.2E-02 C	3.0E-02	NC2LGW	YES	DLASL
	86-74-8	Carbazole	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	N/A	N/A	N/A	NO	NTX
	132-64-9	Dibenzofuran	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	3.7E+00 N	N/A	N/A	NO	DLBSL
	131-11-3	Dimethyl phthalate	ND	ND	UG/L		0/5	5.1 - 5.4	5.4E+00	N/A	N/A	N/A	N/A	NO	NTX
	86-73-7	Fluorene	1.0E-01 J	1.0E-01 J	UG/L	IR86-GW60IW-09D	1/5	0.2 - 0.22	1.0E-01	N/A	1.5E+02 N	3.0E+02	NC2LGW	NO	BSL
	91-20-3	Naphthalene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.4E-01 C*	6.0E+00	NC2LGW	YES	DLASL
	98-95-3	Nitrobenzene	ND	ND	UG/L		0/5	1 - 1.1	1.1E+00	N/A	1.2E-01 C	N/A	N/A	YES	DLASL
	85-01-8	Phenanthrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+03 N	2.0E+02	NC2LGW	NO	DLBSL
	129-00-0	Pyrene	ND	ND	UG/L		0/5	0.2 - 0.22	2.2E-01	N/A	1.1E+02 N	2.0E+03	NC2LGW	NO	DLBSL
	5103-71-9	alpha-Chlordane	ND	ND	UG/L		0/5	0.025 - 0.026	2.6E-02	N/A	1.9E-01 C*	1.0E-01	NC2LGW	NO	DLBSL
	11104-28-2	Aroclor-1221	ND	ND	UG/L		0/5	0.5 - 0.53	5.3E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL
	11141-16-5	Aroclor-1232	ND	ND	UG/L		0/5	0.6 - 0.63	6.3E-01	N/A	6.8E-03 C	N/A	N/A	YES	DLASL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening.
[3] Background values are two times the mean shallow groundwater basewide background concentrations.
[4] Oak Ridge National Laboratory (ORNL). November, 2010. Regional Screening Levels for Chemical Contaminants at Superfund Sites.
Tap Water RSLs (based on 10^{-6} for carcinogens and HQ of 0.1 for noncarcinogens). [Online]. Available: http://epa-prgs.ornl.gov/chemicals/index.shtml
RSL value for 1,4-dichlorobenzene used as surrogate for 1,3-dichlorobenzene.
RSL value for methoxychlor used as surrogate for 4-Chlorophenyl-phenylether.
RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.
RSL value for Nitrobenzene used as surrogate for 4-Nitrophenol.
RSL value for Acenaphthene used as surrogate for Acenaphthylene.
RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.
RSL value for anthracene used as surrogate for phenanthrene.
RSL value for Mercury (inorganic salts) used as surrogate for mercury.
RSL value for 1,3-dichloropropene used as a surrogate for cis-1,3-dichloropropene and trans-1,3-dichloropropene.
RSL value for chromium VI used as surrogate for chromium.
RSL value for 2-chlorophenol used as surrogate for 4-chloro-3-methylphenol and 2-nitrophenol.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Levels (DLASL), not evaluated quantitatively
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
N/A = Not Applicable/Not Available
ND = Not Detected
C = Carcinogenic
C* = Carcinogenic (where nc RSL<100 x ca RSL)
C**= Carcinogenic (where nc RSL < 10 X ca RSL, therefore, nc RSL used)
J = Estimated Value
MCL = Drinking water Maximum Contaminant Level (MCL) (USEPA, 2009).
N = Noncarcinogenic
NA = Not available
µg/L = microgram per liter
NC2LGWL = North Carolina Classifications and Groundwater Quality Standards, Amended January 2010.

Created by: Debbie Stannard
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.1.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Surface Soil in Industrial Area	Benzo(a)anthracene	mg/kg	9.4E-02	1.6E-01	NP	2.6E-01		1.6E-01	mg/kg	95% KM-t	1, 3
	Benzo(a)pyrene	mg/kg	7.3E-02	1.2E-01	NP	2.2E-01		1.2E-01	mg/kg	95% KM-t	1, 2, 3
	Benzo(b)fluoranthene	mg/kg	1.0E-01	1.6E-01	NP	2.9E-01		1.6E-01	mg/kg	95% KM-t	1, 2, 3
	Benzo(k)fluoranthene*	mg/kg	7.0E-02	1.3E-01	NP	1.9E-01	J	1.3E-01	mg/kg	95% KM-t	1, 2, 3
	Chrysene*	mg/kg	1.1E-01	1.8E-01	NP	2.6E-01	J	1.8E-01	mg/kg	95% KM-t	1, 3
	Indeno(1,2,3-cd)pyrene	mg/kg	5.6E-02	9.6E-01	NP	1.7E-01		9.6E-01	mg/kg	95% KM-t	1, 2, 3
	Aluminum	mg/kg	4.4E+03	5.4E+03	N	1.0E+04	J	5.4E+03	mg/kg	95% Stud-t	1, 2, 3
	Arsenic	mg/kg	1.4E+00	1.8E+00	NP	3.2E+00		1.8E+00	mg/kg	95% KM-t	1, 2, 3
	Chromium	mg/kg	1.0E+01	1.3E+01	N	2.3E+01		1.3E+01	mg/kg	95% Stud-t	1, 2, 3
	Cobalt	mg/kg	1.4E+00	1.8E+00	NP	2.5E+00		1.8E+00	mg/kg	95% KM-t	1, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); 95% Student's-T test UCL (95% Stud-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.2.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Emissions from Surface Soil in Industrial Area	Chromium	mg/m^3	7.4E-09	9.3E-09	N	1.7E-08	9.3E-09	mg/m^3	95% Stud-t	1, 2, 3

Notes:

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Student's-T test UCL (95% Stud-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.3.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Surface Soil in Flight Line Area	Benzo(a)anthracene	mg/kg	4.8E-02	1.9E-01	G	2.4E-01	J	1.9E-01	mg/kg	App Gamma	1, 3
	Benzo(a)pyrene	mg/kg	5.9E-02	2.3E-01	G	2.9E-01	J	2.3E-01	mg/kg	App Gamma	1, 3
	Benzo(b)fluoranthene	mg/kg	8.0E-02	2.9E-01	G	3.6E-01	J	2.9E-01	mg/kg	App Gamma	1, 3
	Benzo(k)fluoranthene*	mg/kg	4.4E-02	3.4E-01	G	2.8E-01	J	2.8E-01	mg/kg	Max	1, 3, 5
	Chrysene*	mg/kg	6.0E-02	2.3E-01	NP	2.9E-01	J	2.3E-01	mg/kg	95% KM	1, 3
	Dibenz(a,h)anthracene*	mg/kg	3.0E-03	6.9E-03	NP	8.3E-03		6.9E-03	mg/kg	95% Cheb-m	4
	Indeno(1,2,3-cd)pyrene	mg/kg	4.5E-02	1.8E-01	NP	2.2E-01	J	1.8E-01	mg/kg	95% KM	1, 3
	Aluminum	mg/kg	9.5E+03	1.2E+04	N	1.5E+04		1.2E+04	mg/kg	95% Stud-t	1, 2, 3
	Arsenic	mg/kg	6.7E-01	9.3E-01	NP	1.4E+00		9.3E-01	mg/kg	95% KM-t	1, 2, 3
	Chromium	mg/kg	9.8E+00	1.2E+01	N	1.3E+01		1.2E+01	mg/kg	95% Stud-t	2, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Approximate Gamma UCL (App. Gamma); 95% Kaplan-Meier Chebyshev UCL (95% KM); 95% Kaplan-Meier (t) UCL (95% KM-t); 95% Student's-T test UCL (95% Stud-t); 95% Chebyshev (Mean, Sd) UCL (95% Cheb-m

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive
(5) Max value used because 95% UCL greater than max.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.4

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Pond	Iron	µg/L	7.0E+02	NA	7.1E+02	7.1E+02	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max); Mean Detected Value (Mean-N)

UCL Rationale:

(1) Maximum detected concentration used because only two surface water samples available.

µg/L - milligrams per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.5

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Pond	Benzo(a)anthracene*	mg/kg	8.7E-03	NA	1.5E-02	1.5E-02	mg/kg	Max	1
	Benzo(a)pyrene	mg/kg	1.0E-02	NA	1.9E-02	1.9E-02	mg/kg	Max	1
	Benzo(b)fluoranthene*	mg/kg	2.0E-02	NA	3.8E-02	3.8E-02	mg/kg	Max	1
	Benzo(k)fluoranthene*	mg/kg	1.7E-02	NA	3.1E-02	3.1E-02	mg/kg	Max	1
	Chrysene*	mg/kg	2.0E-02	NA	4.1E-02	4.1E-02	mg/kg	Max	1
	Dibenz(a,h)anthracene*	mg/kg	1.6E-02	NA	7.5E-03	7.5E-03	mg/kg	Max	1
	Indeno(1,2,3-cd)pyrene*	mg/kg	1.5E-02	NA	2.9E-02	2.9E-02	mg/kg	Max	1
	Arsenic	mg/kg	1.9E+00	NA	2.7E+00	2.7E+00	mg/kg	Max	1
	Chromium	mg/kg	8.5E+00	NA	1.4E+01	1.4E+01	mg/kg	Max	1
	Iron	mg/kg	4.4E+03	NA	7.2E+03	7.2E+03	mg/kg	Max	1

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Maximum detected concentration used because only two sediment samples available.

mg/kg - milligrams per kilogram
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.6.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe:Current/ Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Drainage Ditch	Benzo(a)anthracene	µg/L	1.4E-01	1.5E-01	NP	1.5E-01	J	1.5E-01	µg/L	95% KM-t	4
	Benzo(a)pyrene	µg/L	9.2E-02	1.2E-01	NP	3.4E-02	J	3.4E-02	µg/L	Max	4, 5
	Benzo(b)fluoranthene	µg/L	6.5E-02	1.0E-01	NP	8.3E-02	J	8.3E-02	µg/L	Max	4, 5
	Indeno(1,2,3-cd)pyrene	µg/L	9.7E-02	1.1E-01	NP	6.8E-02	J	6.8E-02	µg/L	Max	4, 5
	Naphthalene	µg/L	1.2E-01	1.5E-01	NP	1.9E-01	J	1.1E-01	µg/L	95% Mod-t	4
	Aluminum	µg/L	7.4E+02	2.0E+03	NP	3.8E+03		2.0E+03	µg/L	95% KM-BCA	1, 3
	Iron	µg/L	6.6E+03	5.9E+04	NP	3.3E+04		3.3E+04	µg/L	Max	4, 5
	Manganese	µg/L	1.2E+02	3.7E+02	NP	4.1E+02		3.7E+02	µg/L	95% Cheb-m	4
	Vanadium	µg/L	4.5E+01	2.6E+01	NP	2.2E+01	J	2.2E+01	µg/L	Max	4, 5

Notes:

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); Maximum Detected Concentration (Max)
95% Chebyshev (Mean, Sd) UCL (95% Cheb-m); 95% Modified-t UCL (95% Mod-t

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive
(5) Max value used because 95% UCL greater than max.

µg/L - micrograms per liter
G - Gamma
J- Estimated Value
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.7.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Drainage Ditch	Benzo(a)anthracene	mg/kg	8.7E-01	2.6E+00	NP	4.7E+00	2.6E+00	mg/kg	App. Gamm	1, 3
	Benzo(a)pyrene	mg/kg	1.3E+00	3.6E+00	NP	6.2E+00	3.6E+00	mg/kg	App. Gamm	1, 3
	Benzo(b)fluoranthene	mg/kg	2.6E+00	7.4E+00	NP	1.2E+01	7.4E+00	mg/kg	App. Gamm	1, 3
	Benzo(k)fluoranthene	mg/kg	8.0E-01	2.3E+00	NP	4.0E+00	2.3E+00	mg/kg	App. Gamm	1, 3
	Chrysene*	mg/kg	1.5E+00	4.2E+00	NP	7.0E+00	4.2E+00	mg/kg	App. Gamm	1, 3
	Dibenz(a,h)anthracene	mg/kg	5.1E-02	8.9E-02	NP	1.0E-01	8.9E-02	mg/kg	95% KM-t	1, 2
	Indeno(1,2,3-cd)pyrene	mg/kg	1.3E+00	3.5E+00	NP	5.7E+00	3.5E+00	mg/kg	App. Gamm	1, 3
	Aluminum	mg/kg	1.2E+04	1.5E+04	N	1.7E+04	1.5E+04	mg/kg	95% Stud-t	2, 3
	Antimony	mg/kg	1.3E+00	3.8E+00	T	5.9E+00	3.8E+00	mg/kg	95% H-UCL	1
	Arsenic	mg/kg	3.3E+00	5.3E+00	NP	9.7E+00	5.3E+00	mg/kg	95% KM-BC	1, 3
	Cadmium	mg/kg	4.0E+00	5.8E+00	N	8.2E+00	5.8E+00	mg/kg	95% Stud-t	1, 2, 3
	Chromium	mg/kg	2.3E+01	3.0E+01	N	3.6E+01	3.0E+01	mg/kg	95% Stud-t	1, 2, 3
	Cobalt	mg/kg	4.5E+00	6.0E+00	N	7.9E+00	6.0E+00	mg/kg	95% Stud-t	1, 2, 3
	Iron	mg/kg	1.1E+04	1.8E+04	NP	3.0E+04	1.8E+04	mg/kg	App. Gamm	1, 3
	Vanadium	mg/kg	2.8E+01	3.7E+01	N	5.2E+01	3.7E+01	mg/kg	95% Stud-t	1, 2, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); 95% Student's-T test UCL (95% Stud-t)
95% Approximate Gamma UCL (App. Gamma); 95% H-UCL

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J = Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.8.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Soil* in Industrial area	Benzo(a)anthracene	mg/kg	5.3E-02	9.5E-02	NP	2.6E-01		9.5E-02	mg/kg	95% KM-t	1, 3
	Benzo(a)pyrene	mg/kg	4.1E-02	7.3E-02	NP	2.2E-01		7.3E-02	mg/kg	95% KM-t	1, 2, 3
	Benzo(b)fluoranthene	mg/kg	6.0E-02	9.9E-02	NP	2.9E-01		9.9E-02	mg/kg	95% KM-t	1, 2, 3
	Benzo(k)fluoranthene**	mg/kg	3.9E-02	7.1E-02	NP	1.9E-01	J	7.1E-02	mg/kg	95% KM-t	1, 3
	Chrysene**	mg/kg	5.9E-02	1.1E-01	NP	2.6E-01	J	1.1E-01	mg/kg	95% KM-t	1, 3
	Indeno(1,2,3-cd)pyrene	mg/kg	3.2E-02	5.6E-02	NP	1.7E-01		5.6E-02	mg/kg	95% KM-t	1, 2, 3
	Aluminum	mg/kg	7.7E+03	1.0E+04	G	3.8E+04	J	1.0E+04	mg/kg	App Gamma	1, 3
	Arsenic	mg/kg	1.2E+00	1.5E+00	NP	3.2E+00		1.5E+00	mg/kg	95% KM-BCA	1, 3
	Chromium	mg/kg	1.2E+01	1.5E+01	G	4.1E+01		1.5E+01	mg/kg	App Gamma	1, 3
	Cobalt	mg/kg	1.2E+00	1.5E+00	NP	2.5E+00		1.5E+00	mg/kg	95% KM-t	1, 2, 3
	Iron	mg/kg	3.2E+03	4.0E+03	G	8.3E+03	J	4.0E+03	mg/kg	App Gamma	1, 3

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); 95% Student's-T test UCL (95% Stud-t)
95% Approximate Gamma UCL (App. Gamma)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G = Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.9.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Emissions from Soil* in Industrial Area	Chromium	mg/m^3	8.6E-09	1.1E-08 N	3.0E-08	1.1E-08	mg/m^3	95% Stud-t	1, 2, 3

Notes:

* Surface soil & subsurface soil combined.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Student's-T test UCL (95% Stud-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.10.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Soil* from Flight Line Area	Benzo(a)anthracene	mg/kg	2.3E-02	4.8E-02	NP	2.4E-01	J	4.8E-02	mg/kg	95% KM-BCA	1, 3
	Benzo(a)pyrene	mg/kg	2.9E-02	6.1E-02	NP	2.9E-01	J	6.1E-02	mg/kg	95% KM-BCA	1, 3
	Benzo(b)fluoranthene	mg/kg	3.9E-02	7.5E-02	NP	3.6E-01	J	7.5E-02	mg/kg	95% KM-BCA	1, 3
	Benzo(k)fluoranthene**	mg/kg	2.3E-02	5.4E-02	NP	2.8E-01	J	5.4E-02	mg/kg	95% KM-BCA	1, 3
	Chrysene**	mg/kg	2.9E-02	5.8E-02	NP	2.9E-01	J	5.8E-02	mg/kg	95% KM-t	1, 3
	Dibenz(a,h)anthracene**	mg/kg	2.4E-03	3.1E-03	NP	8.3E-03		3.1E-03	mg/kg	95% Mod-t	4
	Indeno(1,2,3-cd)pyrene	mg/kg	2.2E-02	4.4E-02	NP	2.2E-01	J	4.4E-02	mg/kg	95% KM-t	1, 3
	Aluminum	mg/kg	1.5E+04	2.1E+04	G	5.2E+04		2.1E+04	mg/kg	App. Gamma	1, 3
	Arsenic	mg/kg	2.9E+00	1.1E+01	NP	2.0E+01		1.1E+01	mg/kg	97.5% KM	4
	Chromium	mg/kg	1.8E+01	3.4E+01	NP	6.3E+01		3.4E+01	mg/kg	95% Cheb-m	4
	Cobalt	mg/kg	1.2E+00	1.5E+00	G	2.8E+00		1.5E+00	mg/kg	App. Gamma	1, 3
	Iron	mg/kg	6.5E+03	1.4E+04	NP	2.5E+04	J	1.4E+04	mg/kg	95% Cheb-m	4
	Vanadium	mg/kg	2.8E+01	5.9E+01	NP	1.2E+02		5.9E+01	mg/kg	95% Cheb-m	4

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); 95% Student's-T test UCL (95% Stud-t); 95% Chebyshev (Mean, Sd) UCL (95% Cheb-m); 95% Approximate Gamma UCL (App. Gamma); 97.5% Kaplan-Meier Chebyshev (97.5% KM); 95% Modified-t UCL (95% Mod-t)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.11.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Emissions from Soil* from Flight Line Area	Chromium	mg/m^3	1.3E-08	2.5E-08 NP	4.6E-08	2.5E-08	mg/m^3	95% Cheb-m	4

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Chebyshev (Mean, Sd) UCL (95% Cheb-m)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.12.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 1

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Surficial Aquifer Tap Water and Water in Excavation Pit	1,1-Dichloroethane	µg/L	7.9E-01	NA	3.4E+00		7.9E-01	µg/L	Mean-N	1
	2-Hexanone	µg/L	NA	NA	1.4E+01		1.4E+01	µg/L	Max	2
	Benzene	µg/L	2.3E+00	NA	9.6E+00		2.3E+00	µg/L	Mean-N	1
	Chloroform	µg/L	6.9E-01	NA	2.0E+00	J	6.9E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.6E+01	NA	1.5E+02	J	3.6E+01	µg/L	Mean-N	1
	Dichlorodifluoromethane (Freon-12)	µg/L	6.5E+00	NA	5.1E+01		6.5E+00	µg/L	Mean-N	1
	Ethylbenzene	µg/L	NA	NA	9.2E-01	J	9.2E-01	µg/L	Max	2
	Tetrachloroethene	µg/L	NA	NA	1.9E+02		1.9E+02	µg/L	Max	2
	Trichloroethene	µg/L	4.5E+01	NA	2.6E+02		4.5E+01	µg/L	Mean-N	1
	Vinyl chloride	µg/L	1.0E+01	NA	6.8E+01	J	1.0E+01	µg/L	Mean-N	1
	Naphthalene	µg/L	NA	NA	1.9E-01	J	1.9E-01	µg/L	Max	2
	Antimony	µg/L	NA	NA	3.4E+00	J	3.4E+00	µg/L	Max	2
	Iron	µg/L	5.3E+03	NA	1.1E+04		5.3E+03	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.13.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 2

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW19-09D) Tap Water	Tetrachloroethene	µg/L	NA	NA	2.4E+00	2.4E+00	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.14.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 3

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW59DW-09D) Tap Water	Chloroform	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1
	Benzo(a)pyrene	µg/L	NA	NA	2.0E-01	J	2.0E-01	µg/L	Max	1
	Benzo(b)fluoranthene	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1
	Benzo(k)fluoranthene	µg/L	NA	NA	3.1E-01	J	3.1E-01	µg/L	Max	1
	Dibenz(a,h)anthracene	µg/L	NA	NA	5.5E-01	J	5.5E-01	µg/L	Max	1
	Indeno(1,2,3-cd)pyrene	µg/L	NA	NA	4.5E-01	J	4.5E-01	µg/L	Max	1
	Chromium	µg/L	NA	NA	7.6E+01		7.6E+01	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.15.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 4

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Upper Aquifer Plume 1 Tap Water	Benzene	µg/L	1.8E+00	NA	4.0E+00	1.8E+00	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	1.6E+02	NA	3.5E+02 J	1.6E+02	µg/L	Mean-N	1
	trans-1,2-Dichloroethene	µg/L	5.2E+00	NA	1.6E+01	5.2E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	1.6E+02	NA	7.1E+02	1.6E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	2.3E+01	NA	1.4E+02	2.3E+01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.16.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 5

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Upper Aquifer Plume 2 (VOC plume) Tap Water	Benzene	µg/L	4.5E-01	NA	4.5E-01	J	4.5E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.0E+01	NA	6.6E+01		3.0E+01	µg/L	Mean-N	1
	Tetrachloroethene	µg/L	NA	NA	2.8E-01	J	2.8E-01	µg/L	Max	2
	trans-1,2-Dichloroethene	µg/L	2.1E+00	NA	1.0E+01		2.1E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	2.7E+01	NA	1.4E+02		1.4E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	3.8E-01	NA	6.0E-01		3.8E-01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.17.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 1

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Surficial Aquifer Water Vapors at Showerhead and Excavation Pit	1,1-Dichloroethane	µg/L	7.9E-01	NA	3.4E+00		7.9E-01	µg/L	Mean-N	1
	2-Hexanone	µg/L	NA	NA	1.4E+01		1.4E+01	µg/L	Max	2
	Benzene	µg/L	2.3E+00	NA	9.6E+00		2.3E+00	µg/L	Mean-N	1
	Chloroform	µg/L	6.9E-01	NA	2.0E+00	J	6.9E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.6E+01	NA	1.5E+02	J	3.6E+01	µg/L	Mean-N	1
	Dichlorodifluoromethane (Freon-12)	µg/L	6.5E+00	NA	5.1E+01		6.5E+00	µg/L	Mean-N	1
	Ethylbenzene	µg/L	NA	NA	9.2E-01	J	9.2E-01	µg/L	Max	2
	Tetrachloroethene	µg/L	NA	NA	1.9E+02		1.9E+02	µg/L	Max	2
	Trichloroethene	µg/L	4.5E+01	NA	2.6E+02		4.5E+01	µg/L	Mean-N	1
	Vinyl chloride	µg/L	1.0E+01	NA	6.8E+01	J	1.0E+01	µg/L	Mean-N	1
	Naphthalene	µg/L	NA	NA	1.9E-01	J	1.9E-01	µg/L	Max	2

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.18.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 2

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW19-09D) Water Vapors at Showerhead	Tetrachloroethene	µg/L	NA	NA	2.4E+00	2.4E+00	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.19.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 3

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW59DW-09D) Water Vapors at Showerhead	Chloroform	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.20.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 4

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Upper Aquifer Plume 1 Water Vapors at Showerhead	Benzene	µg/L	1.8E+00	NA	4.0E+00		1.8E+00	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	1.6E+02	NA	3.5E+02	J	1.6E+02	µg/L	Mean-N	1
	trans-1,2-Dichloroethene	µg/L	5.2E+00	NA	1.6E+01		5.2E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	1.6E+02	NA	7.1E+02		1.6E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	2.3E+01	NA	1.4E+02		2.3E+01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.21.RME

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 5

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Upper Aquifer Plume 2 (VOC plume)	Benzene	µg/L	4.5E-01	NA	4.5E-01	J	4.5E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.0E+01	NA	6.6E+01		3.0E+01	µg/L	Mean-N	1
	Tetrachloroethene	µg/L	NA	NA	2.8E-01	J	2.8E-01	µg/L	Max	2
	trans-1,2-Dichloroethene	µg/L	2.1E+00	NA	1.0E+01		2.1E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	2.7E+01	NA	1.4E+02		2.7E+01	µg/L	Mean-N	1
	Vinyl chloride	µg/L	3.8E-01	NA	6.0E-01		3.8E-01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.

NA - Not applicable
µg/L - micrograms per liter
J - Estimated Value

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.1.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Surface Soil in Industrial Area	Benzo(a)anthracene	mg/kg	9.4E-02	1.6E-01	NP	2.6E-01		9.4E-02	mg/kg	Mean-NP	1, 3
	Benzo(a)pyrene	mg/kg	7.3E-02	1.2E-01	NP	2.2E-01		7.3E-02	mg/kg	Mean-NP	1, 2, 3
	Benzo(b)fluoranthene	mg/kg	1.0E-01	1.6E-01	NP	2.9E-01		1.0E-01	mg/kg	Mean-NP	1, 2, 3
	Benzo(k)fluoranthene*	mg/kg	7.0E-02	1.3E-01	NP	1.9E-01	J	7.0E-02	mg/kg	Mean-NP	1, 2, 3
	Chrysene*	mg/kg	1.1E-01	1.8E-01	NP	2.6E-01	J	1.1E-01	mg/kg	Mean-NP	1, 3
	Indeno(1,2,3-cd)pyrene	mg/kg	5.6E-02	9.6E-01	NP	1.7E-01		5.6E-02	mg/kg	Mean-NP	1, 2, 3
	Aluminum	mg/kg	4.4E+03	5.4E+03	N	1.0E+04	J	4.4E+03	mg/kg	Mean-N	1, 2, 3
	Arsenic	mg/kg	1.4E+00	1.8E+00	NP	3.2E+00		1.4E+00	mg/kg	Mean-NP	1, 2, 3
	Chromium	mg/kg	1.0E+01	1.3E+01	N	2.3E+01		1.0E+01	mg/kg	Mean-N	1, 2, 3
	Cobalt	mg/kg	1.4E+00	1.8E+00	NP	2.5E+00		1.4E+00	mg/kg	Mean-NP	1, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP); Mean-Normal (Mean-N)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.2.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Emissions from Surface Soil in Industrial Area	Chromium	mg/m^3	7.4E-09	9.3E-09 N	1.7E-08	7.4E-09	mg/m^3	Mean-N	1, 2, 3

Notes:

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Normal (Mean-N)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.3.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Surface Soil in Flight Line Area	Benzo(a)anthracene	mg/kg	4.8E-02	1.9E-01	G	2.4E-01	J	4.8E-02	mg/kg	Mean-NP	1, 3
	Benzo(a)pyrene	mg/kg	5.9E-02	2.3E-01	G	2.9E-01	J	5.9E-02	mg/kg	Mean-NP	1, 3
	Benzo(b)fluoranthene	mg/kg	8.0E-02	2.9E-01	G	3.6E-01	J	8.0E-02	mg/kg	Mean-NP	1, 3
	Benzo(k)fluoranthene*	mg/kg	4.4E-02	3.4E-01	G	2.8E-01	J	4.4E-02	mg/kg	Mean-NP	1, 3, 5
	Chrysene*	mg/kg	6.0E-02	2.3E-01	NP	2.9E-01	J	6.0E-02	mg/kg	Mean-NP	1, 3
	Dibenz(a,h)anthracene*	mg/kg	3.0E-03	6.9E-03	NP	8.3E-03		3.0E-03	mg/kg	Mean-NP	4
	Indeno(1,2,3-cd)pyrene	mg/kg	4.5E-02	1.8E-01	NP	2.2E-01	J	4.5E-02	mg/kg	Mean-NP	1, 3
	Aluminum	mg/kg	9.5E+03	1.2E+04	N	1.5E+04		9.5E+03	mg/kg	Mean-N	1, 2, 3
	Arsenic	mg/kg	6.7E-01	9.3E-01	NP	1.4E+00		6.7E-01	mg/kg	Mean-NP	1, 2, 3
	Chromium	mg/kg	9.8E+00	1.2E+01	N	1.3E+01		9.8E+00	mg/kg	Mean-N	2, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP); Mean-Normal (Mean-N)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive
(5) Max value used because 95% UCL greater than max.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.4.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Pond	Iron	µg/L	7.0E+02	NA	7.1E+02	7.0E+02	µg/L	Mean-N	1

Notes:

ProUCL, Version 4.0 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2007. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

UCL Rationale:

(1) Arithmetic mean used as because only two surface water samples available.

µg/L - milligrams per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.5 CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Pond	Benzo(a)anthracene*	mg/kg	8.7E-03	NA	1.5E-02	J	8.7E-03	mg/kg	Mean-N	1
	Benzo(a)pyrene	mg/kg	1.0E-02	NA	1.9E-02	J	1.0E-02	mg/kg	Mean-N	1
	Benzo(b)fluoranthene*	mg/kg	2.0E-02	NA	3.8E-02		2.0E-02	mg/kg	Mean-N	1
	Benzo(k)fluoranthene*	mg/kg	1.7E-02	NA	3.1E-02	J	1.7E-02	mg/kg	Mean-N	1
	Chrysene*	mg/kg	2.0E-02	NA	4.1E-02	J	2.0E-02	mg/kg	Mean-N	1
	Dibenz(a,h)anthracene*	mg/kg	1.6E-02	NA	7.5E-03	J	1.6E-02	mg/kg	Mean-N	1
	Indeno(1,2,3-cd)pyrene*	mg/kg	1.5E-02	NA	2.9E-02	J	1.5E-02	mg/kg	Mean-N	1
	Arsenic	mg/kg	1.9E+00	NA	2.7E+00		1.9E+00	mg/kg	Mean-N	1
	Chromium	mg/kg	8.5E+00	NA	1.4E+01		8.5E+00	mg/kg	Mean-N	1
	Iron	mg/kg	4.4E+03	NA	7.2E+03		4.4E+03	mg/kg	Mean-N	1

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

Options: Mean-Normal (Mean-N)

UCL Rationale:

(1) Arithmetic mean used as because only two sediment samples available.

mg/kg - milligrams per kilogram
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.6.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe:Current/ Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Drainage Ditch	Benzo(a)anthracene	µg/L	1.4E-01	1.5E-01	NP	1.5E-01	J	1.4E-01	µg/L	Mean-NP	4
	Benzo(a)pyrene	µg/L	9.2E-02	1.2E-01	NP	3.4E-02	J	9.2E-02	µg/L	Mean-NP	4
	Benzo(b)fluoranthene	µg/L	6.5E-02	1.0E-01	NP	8.3E-02	J	6.5E-02	µg/L	Mean-NP	4
	Indeno(1,2,3-cd)pyrene	µg/L	9.7E-02	1.1E-01	NP	6.8E-02	J	9.7E-02	µg/L	Mean-NP	4
	Naphthalene	µg/L	1.2E-01	1.5E-01	NP	1.9E-01	J	1.2E-01	µg/L	Mean-NP	4
	Aluminum	µg/L	7.4E+02	2.0E+03	NP	3.8E+03		7.4E+02	µg/L	Mean-NP	1, 3
	Cadmium	µg/L	1.2E+00	1.6E+00	NP	2.1E+00		1.2E+00	µg/L	Mean-NP	4
	Chromium	µg/L	4.1E+00	1.1E+01	NP	1.2E+01		4.1E+00	µg/L	Mean-NP	4
	Iron	µg/L	6.6E+03	5.9E+04	NP	3.3E+04			µg/L	Mean-NP	4
	Manganese	µg/L	1.2E+02	3.7E+02	NP	4.1E+02			µg/L	Mean-NP	4
	Vanadium	µg/L	4.5E+01	2.6E+01	NP	2.2E+01	J		µg/L	Mean-NP	4

Notes:

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive

µg/L - micrograms per liter
G - Gamma
J - Estimated Value
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.7.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Drainage Ditch	Benzo(a)anthracene	mg/kg	8.7E-01	2.6E+00	NP	4.7E+00	8.7E-01	mg/kg	Mean-NP	1, 3
	Benzo(a)pyrene	mg/kg	1.3E+00	3.6E+00	NP	6.2E+00	1.3E+00	mg/kg	Mean-NP	1, 3
	Benzo(b)fluoranthene	mg/kg	2.6E+00	7.4E+00	NP	1.2E+01	2.6E+00	mg/kg	Mean-NP	1, 3
	Benzo(k)fluoranthene	mg/kg	8.0E-01	2.3E+00	NP	4.0E+00	8.0E-01	mg/kg	Mean-NP	1, 3
	Chrysene*	mg/kg	1.5E+00	4.2E+00	NP	7.0E+00	1.5E+00	mg/kg	Mean-NP	1, 3
	Dibenz(a,h)anthracene	mg/kg	5.1E-02	8.9E-02	NP	1.0E-01	5.1E-02	mg/kg	Mean-NP	1, 2
	Indeno(1,2,3-cd)pyrene	mg/kg	1.3E+00	3.5E+00	NP	5.7E+00	1.3E+00	mg/kg	Mean-NP	1, 3
	Aluminum	mg/kg	1.2E+04	1.5E+04	N	1.7E+04	1.2E+04	mg/kg	Mean-N	2, 3
	Antimony	mg/kg	1.3E+00	3.8E+00	T	5.9E+00	1.1E+00	mg/kg	Mean-T	1
	Arsenic	mg/kg	3.3E+00	5.3E+00	NP	9.7E+00	3.3E+00	mg/kg	Mean-NP	1, 3
	Cadmium	mg/kg	4.0E+00	5.8E+00	N	8.2E+00	4.0E+00	mg/kg	Mean-N	1, 2, 3
	Chromium	mg/kg	2.3E+01	3.0E+01	N	3.6E+01	2.3E+01	mg/kg	Mean-N	1, 2, 3
	Cobalt	mg/kg	4.5E+00	6.0E+00	N	7.9E+00	4.5E+00	mg/kg	Mean-N	1, 2, 3
	Iron	mg/kg	1.1E+04	1.8E+04	NP	3.0E+04	1.1E+04	mg/kg	Mean-NP	1, 3
	Vanadium	mg/kg	2.8E+01	3.7E+01	N	5.2E+01	2.8E+01	mg/kg	Mean-N	1, 2, 3

Notes:

* Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP); Mean-Normal (Mean-N)
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.8.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Soil* in Industrial Area	Benzo(a)anthracene	mg/kg	5.3E-02	9.5E-02	NP	2.6E-01		5.3E-02	mg/kg	Mean-NP	1, 3
	Benzo(a)pyrene	mg/kg	4.1E-02	7.3E-02	NP	2.2E-01		4.1E-02	mg/kg	Mean-NP	1, 2, 3
	Benzo(b)fluoranthene	mg/kg	6.0E-02	9.9E-02	NP	2.9E-01		6.0E-02	mg/kg	Mean-NP	1, 2, 3
	Benzo(k)fluoranthene**	mg/kg	3.9E-02	7.1E-02	NP	1.9E-01	J	3.9E-02	mg/kg	Mean-NP	1, 3
	Chrysene**	mg/kg	5.9E-02	1.1E-01	NP	2.6E-01	J	5.9E-02	mg/kg	Mean-NP	1, 3
	Indeno(1,2,3-cd)pyrene	mg/kg	3.2E-02	5.6E-02	NP	1.7E-01		3.2E-02	mg/kg	Mean-NP	1, 2, 3
	Aluminum	mg/kg	7.7E+03	1.0E+04	G	3.8E+04	J	7.7E+03	mg/kg	Mean-N	1, 3
	Arsenic	mg/kg	1.2E+00	1.5E+00	NP	3.2E+00		1.2E+00	mg/kg	Mean-NP	1, 3
	Chromium	mg/kg	1.2E+01	1.5E+01	G	4.1E+01		1.2E+01	mg/kg	Mean-N	1, 3
	Cobalt	mg/kg	1.2E+00	1.5E+00	NP	2.5E+00		1.2E+00	mg/kg	Mean-NP	1, 2, 3
	Iron	mg/kg	3.2E+03	4.0E+03	G	8.3E+03	J	3.2E+03	mg/kg	Mean-N	1, 3

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: 95% Kaplan-Meier (t) UCL (95% KM-t); (95% KM-BCA); 95% Student's-T test UCL (95% Stud-t)
95% Approximate Gamma UCL (App. Gamma)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/kg - milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.9.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Emissions from Soil* in Industrial Area	Chromium	mg/m^3	8.6E-09	1.1E-08 N	3.0E-08	8.6E-09	mg/m^3	Mean-N	1, 2, 3

Notes:

* Surface soil & subsurface soil combined.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Normal (Mean-N)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.10.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Soil* from Flight Line Area	Benzo(a)anthracene	mg/kg	2.3E-02	4.8E-02	NP	2.4E-01	J	2.3E-02	mg/kg	Mean-NP	1, 3
	Benzo(a)pyrene	mg/kg	2.9E-02	6.1E-02	NP	2.9E-01	J	2.9E-02	mg/kg	Mean-NP	1, 3
	Benzo(b)fluoranthene	mg/kg	3.9E-02	7.5E-02	NP	3.6E-01	J	3.9E-02	mg/kg	Mean-NP	1, 3
	Benzo(k)fluoranthene**	mg/kg	2.3E-02	5.4E-02	NP	2.8E-01	J	2.3E-02	mg/kg	Mean-NP	1, 3
	Chrysene**	mg/kg	2.9E-02	5.8E-02	NP	2.9E-01	J	2.9E-02	mg/kg	Mean-NP	1, 3
	Dibenz(a,h)anthracene**	mg/kg	2.4E-03	3.1E-03	NP	8.3E-03		2.4E-03	mg/kg	Mean-NP	4
	Indeno(1,2,3-cd)pyrene	mg/kg	2.2E-02	4.4E-02	NP	2.2E-01	J	2.2E-02	mg/kg	Mean-NP	1, 3
	Aluminum	mg/kg	1.5E+04	2.1E+04	G	5.2E+04		1.5E+04	mg/kg	Mean-N	1, 3
	Arsenic	mg/kg	2.9E+00	1.1E+01	NP	2.0E+01		2.9E+00	mg/kg	Mean-NP	4
	Chromium	mg/kg	1.8E+01	3.4E+01	NP	6.3E+01		1.8E+01	mg/kg	Mean-NP	4
	Cobalt	mg/kg	1.2E+00	1.5E+00	G	2.8E+00		1.2E+00	mg/kg	Mean-N	1, 3
	Iron	mg/kg	6.5E+03	1.4E+04	NP	2.5E+04	J	6.5E+03	mg/kg	Mean-NP	4
	Vanadium	mg/kg	2.8E+01	5.9E+01	NP	1.2E+02		2.8E+01	mg/kg	Mean-NP	4

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP); Mean-Normal (Mean-N)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive

G - Gamma
J - Estimated Value
mg/kg =- milligrams per kilogram
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.11.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Emissions from Soil* from Flight Line Area	Chromium	mg/m^3	1.3E-08	2.5E-08 NP	4.6E-08	1.3E-08	mg/m^3	Mean-NP	4

Notes:

* Surface soil & subsurface soil combined.

** Did not exceed screening values, retained as a COPC because other carcinogenic PAHs selected as COPCs.

ProUCL, Version 4.00.04 used to determine distribution of data and calculate 95% UCL, following recommendations in users guide (USEPA. February 2009. ProUCL, Version 4.0. Prepared by Lockheed Martin Environmental Services).

Options: Mean-Nonparametric (Mean-NP)

UCL Rationale:

(1) Shapiro-Wilk W Test/Lilliefors test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test/Lilliefors indicates data are normally distributed.
(3) Test indicates data are gamma distributed.
(4) Distribution tests are inconclusive

G - Gamma
J - Estimated Value
mg/m^3 - milligrams per cubic meter
N - Normal
NP - Non-Parametric
T - Log-Transformed

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.12.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 1

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Surficial Aquifer Tap Water and Water in Excavation Pit	1,1-Dichloroethane	µg/L	7.9E-01	NA	3.4E+00		7.9E-01	µg/L	Mean-N	1
	2-Hexanone	µg/L	NA	NA	1.4E+01		1.4E+01	µg/L	Max	2
	Benzene	µg/L	2.3E+00	NA	9.6E+00		2.3E+00	µg/L	Mean-N	1
	Chloroform	µg/L	6.9E-01	NA	2.0E+00	J	6.9E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.6E+01	NA	1.5E+02	J	3.6E+01	µg/L	Mean-N	1
	Dichlorodifluoromethane (Freon-12)	µg/L	6.5E+00	NA	5.1E+01		6.5E+00	µg/L	Mean-N	1
	Ethylbenzene	µg/L	NA	NA	9.2E-01	J	9.2E-01	µg/L	Max	2
	Tetrachloroethene	µg/L	NA	NA	1.9E+02		1.9E+02	µg/L	Max	2
	Trichloroethene	µg/L	4.5E+01	NA	2.6E+02		4.5E+01		Mean-N	1
	Vinyl chloride	µg/L	1.0E+01	NA	6.8E+01	J	1.0E+01		Mean-N	1
	Naphthalene	µg/L	NA	NA	1.9E-01	J	1.9E-01		Max	2
	Antimony	µg/L	NA	NA	3.4E+00	J	3.4E+00	µg/L	Max	2
	Iron	µg/L	5.3E+03	NA	1.1E+04		5.3E+03	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.13.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 2

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW19-09D) Tap Water	Tetrachloroethene	µg/L	NA	NA	2.4E+00	2.4E+00	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because plume dataset consists of only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.14.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 3

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW59DW-09D) Tap Water	Chloroform	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1
	Benzo(a)pyrene	µg/L	NA	NA	2.0E-01	J	2.0E-01	µg/L	Max	1
	Benzo(b)fluoranthene	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1
	Benzo(k)fluoranthene	µg/L	NA	NA	3.1E-01	J	3.1E-01	µg/L	Max	1
	Dibenz(a,h)anthracene	µg/L	NA	NA	5.5E-01	J	5.5E-01	µg/L	Max	1
	Indeno(1,2,3-cd)pyrene	µg/L	NA	NA	4.5E-01	J	4.5E-01	µg/L	Max	1
	Chromium	µg/L	NA	NA	7.6E+01		7.6E+01	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because plume dataset consists of only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC

Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.15.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 4

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Upper Aquifer Plume 1 Tap Water	Benzene	µg/L	1.8E+00	NA	4.0E+00	1.8E+00	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	1.6E+02	NA	3.5E+02 J	1.6E+02	µg/L	Mean-N	1
	trans-1,2-Dichloroethene	µg/L	5.2E+00	NA	1.6E+01	5.2E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	1.6E+02	NA	7.1E+02	1.6E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	2.3E+01	NA	1.4E+02	2.3E+01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.16.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Group 5

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Upper Aquifer Plume 2 (VOC plume) Tap Water	Benzene	µg/L	4.5E-01	NA	4.5E-01	J	4.5E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.0E+01	NA	6.6E+01		3.0E+01	µg/L	Mean-N	1
	Tetrachloroethene	µg/L	NA	NA	2.8E-01	J	2.8E-01	µg/L	Max	2
	trans-1,2-Dichloroethene	µg/L	2.1E+00	NA	1.0E+01		2.1E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	2.7E+01	NA	1.4E+02		1.4E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	3.8E-01	NA	6.0E-01		3.8E-01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.17.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 1

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Surficial Aquifer Water Vapors at Showerhead and Excavation Pit	1,1-Dichloroethane	µg/L	7.9E-01	NA	3.4E+00		7.9E-01	µg/L	Mean-N	1
	2-Hexanone	µg/L	NA	NA	1.4E+01		1.4E+01	µg/L	Max	2
	Benzene	µg/L	2.3E+00	NA	9.6E+00		2.3E+00	µg/L	Mean-N	1
	Chloroform	µg/L	6.9E-01	NA	2.0E+00	J	6.9E-01	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	3.6E+01	NA	1.5E+02	J	3.6E+01	µg/L	Mean-N	1
	Dichlorodifluoromethane (Freon-12)	µg/L	6.5E+00	NA	5.1E+01		6.5E+00	µg/L	Mean-N	1
	Ethylbenzene	µg/L	NA	NA	9.2E-01	J	9.2E-01	µg/L	Max	2
	Tetrachloroethene	µg/L	NA	NA	1.9E+02		1.9E+02	µg/L	Max	2
	Trichloroethene	µg/L	4.5E+01	NA	2.6E+02		4.5E+01	µg/L	Mean-N	1
	Vinyl chloride	µg/L	1.0E+01	NA	6.8E+01	J	1.0E+01	µg/L	Mean-N	1
	Naphthalene	µg/L	NA	NA	1.9E-01	J	1.9E-01	µg/L	Max	2

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.
(2) Maximun detected concentration used because constituent was detected in only one sample.

µg/L - micrograms per liter
J - Estimated Value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.18.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 2

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW19-09D) Water Vapors at Showerhead	Tetrachloroethene	µg/L	NA	NA	2.4E+00	2.4E+00	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because plume dataset consists of only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.19.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 3

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Middle Castle-Hayne (IR86-GW59DW-09D) Water Vapors at Showerhead	Chloroform	µg/L	NA	NA	3.8E-01	J	3.8E-01	µg/L	Max	1

Notes:

Options: Maximum Detected Value (Max)

UCL Rationale:

(1) Maximun detected concentration used because plume dataset consists of only one sample.

µg/L - micrograms per liter
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 3.20.CTE

Medium-Specific Exposure Point Concentration Summary

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater Air Group 4

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Upper Aquifer Plume 1 Water Vapors at Showerhead	Benzene	µg/L	1.8E+00	NA	4.0E+00		1.8E+00	µg/L	Mean-N	1
	cis-1,2-Dichloroethene	µg/L	1.6E+02	NA	3.5E+02	J	1.6E+02	µg/L	Mean-N	1
	trans-1,2-Dichloroethene	µg/L	5.2E+00	NA	1.6E+01		5.2E+00	µg/L	Mean-N	1
	Trichloroethene	µg/L	1.6E+02	NA	7.1E+02		1.6E+02	µg/L	Mean-N	1
	Vinyl chloride	µg/L	2.3E+01	NA	1.4E+02		2.3E+01	µg/L	Mean-N	1

Notes:

Options: Maximum Detected Value (Max); Mean of data assuming normal distribution (Mean-N)

UCL Rationale:

(1) Following EPA Region 4 risk assessment guidance, average concentration used as EPC.

µg/L - Micrograms per liter
J - Estimated value
NA - Not applicable

Generated by: Debbie Stannard/WDC
Checked by: Geanine Howard-Peebles/DAY

TABLE H 4.1.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Military Personnel	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	See Table 3.1.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	See Table 3.1.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Maintenance Worker	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(2)	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000, (4)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

TABLE H 4.1.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Military Personnel	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	See Table 3.1.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	See Table 3.1.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Maintenance Worker	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(2)	
				ED	Exposure Duration	25	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	

TABLE H 4.1.RME

Values Used for Daily Intake Calculations – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Trespasser/Visitor	Youth	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.RME and 3.3.RME	mg/kg	See Tables 3.1.RME and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,200	cm^2	EPA, 2004, (5)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm^2-day	EPA, 2004, (6)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000, (4)	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

(1) Standard tour of duty
(2) Professional judgment assuming maintenance activities performed 1 day/week in industrial area.
(3) Professional judgment assuming trespasser/visitor in industrial area of site 1 day per week for 52 weeks.
(4) Adolescents from 7 to 16 years of age, per EPA 2000.
(5) The skin surface area includes the head, hands, forearms and lower legs for the 7 through 16 year olds.
(6) SSAF is the geometric mean weighted soil adherence for soccer players (teens, 13-15 years old) from EPA, 2004, Exhibit 3-3.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H 4.2.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Military Personnel	Adult	Emissions from Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	See Table 3.2.RME	Exposure Concentration (EC) (mg/m^3) =
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	CA x ET x EF x ED x CF x 1/AT
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Emissions from Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	See Table 3.2.RME	Exposure Concentration (EC) (mg/m^3) =
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	CA x ET x EF x ED x CF x 1/AT
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Maintenance Worker	Adult	Emissions from Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	See Table 3.2.RME	Exposure Concentration (EC) (mg/m^3) =
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	CA x ET x EF x ED x CF x 1/AT
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	52	days/year	(2)	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	

TABLE H 4.2.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Trespasser/Visitor	Adult	Emissions from Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	See Table 3.2.RME	Exposure Concentration (EC) (mg/m^3) =
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	CA x ET x EF x ED x CF x 1/AT
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	2	hour/day	(4)	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Emissions from Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	See Table 3.2.RME	Exposure Concentration (EC) (mg/m^3) =
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	CA x ET x EF x ED x CF x 1/AT
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	2	hour/day	(4)	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

(1) Standard tour of duty
(2) Professional judgment assuming maintenance activities performed 1 day/week in industrial area.
(3) Professional judgment assuming trespasser/visitor in industrial area of site 1 day per week for 52 weeks.
(4) Professional judgment assuming 2 hours per day.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H 4.3.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Military Personnel	Adult	Pond	CSW	Chemical Concentration in Surface Water	See Table 3.4.RME	µg/L	See Table 3.4.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-SW	Ingestion Rate of Surface Water	0.01	liters/hr	EPA, 2000	CSW x IR-SW x ET x EF x ED x CF1 x
				ET	Exposure Time	2	hr/day	(1)	1/BW x 1/AT
				EF	Exposure Frequency	12	days/year	(1)	
				ED	Exposure Duration	4	years	(2)	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Maintenance Worker	Adult	Pond	CSW	Chemical Concentration in Surface Water	See Table 3.4.RME	µg/L	See Table 3.4.RME	CDI (mg/kg-day) =
				IR-SW	Ingestion Rate of Surface Water	0.01	liters/hr	EPA, 2000	CSW x IR-SW x ET x EF x ED x CF1 x
				ET	Exposure Time	4	hr/day	(3)	1/BW x 1/AT
				EF	Exposure Frequency	20	days/year	(3)	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Trespasser/Visitor	Adult	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	CDI (mg/kg-day) =
				IR-SW	Ingestion Rate of Surface Water	0.01	liters/hr	EPA, 2000	CSW x IR-SW x ET x EF x ED x CF1 x
				ET	Exposure Time	2	hr/day	(4)	1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(4)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
		Youth	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-SW	Ingestion Rate of Surface Water	0.01	liters/hr	EPA, 2000	CSW x IR-SW x ET x EF x ED x CF1 x
				ET	Exposure Time	2	hr/day	(4)	1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(4)	
				ED	Exposure Duration	10	years	EPA, 2000	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	

TABLE H 4.3.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Military Personnel	Adult	Pond	CSW	Chemical Concentration in Surface Water	See Table 3.4.RME	µg/L	See Table 3.4.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical Specific	dimensionless	EPA, 2004	
				Kp	Permeability Coefficient	Chemical Specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical Specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	Chemical Specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical Specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	2	hr/day	(1)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (5)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	12	days/year	(1)	
				ED	Exposure Duration	4	years	(2)	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF1 x CF2
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	L/cm^3	- -	
	Maintenance Worker	Adult	Pond	CSW	Chemical Concentration in Surface Water	See Table 3.4.RME	µg/L	See Table 3.4.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical Specific	dimensionless	EPA, 2004	
				Kp	Permeability Coefficient	Chemical Specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical Specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	Chemical Specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical Specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	4	hr/day	(3)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (5)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	20	days/year	(3)	
				ED	Exposure Duration	25	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF1 x CF2
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	L/cm^3	- -	

TABLE H 4.3.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Trespasser/Visitor	Adult	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical Specific	dimensionless	EPA, 2004	
				Kp	Permeability Coefficient	Chemical Specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical Specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	Chemical Specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical Specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	2	hr/day	(4)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (5)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	52	days/year	(4)	
				ED	Exposure Duration	24	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF1 x CF2
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	L/cm^3	- -	
		Youth	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical Specific	dimensionless	EPA, 2004	
				Kp	Permeability Coefficient	Chemical Specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical Specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	Chemical Specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical Specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	2	hr/day	(4)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	4,000	cm^2	EPA, 2004 (5)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	52	days/year	(4)	
				ED	Exposure Duration	10	years	EPA, 2000	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	45	kg	EPA, 2000	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF1 x CF2
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	L/cm^3	- -	

Notes:

(1) Professional judgment assuming 2 hours/day, 1 day/month.
(2) Standard tour of duty
(3) Professional judgment assuming maintenance work in and around pond occurs 4 hours/day, 5 days/week for 4 weeks/year.
(4) Professional judgment assuming fishing and/or tresspassing/visiting activities in and around the pond occur 2 hours/day, 1 day/week for 52 weeks/year.
(5) The skin surface area includes hands, forearms, lower legs, and feet.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000: http://www.epa.gov/region4/waste/ots/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. July 2004.

Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H 4.4.RME

Values Used for Daily Intake Calculations – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Military Personnel	Adult	Pond	CS	Chemical Concentration in Sediment	See Table 3.5.RME	mg/kg	See Table 3.5.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	12	days/year	(2)	
				ED	Exposure Duration	4	years	(3)	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Maintenance Worker	Adult	Pond	CS	Chemical Concentration in Sediment	See Table 3.5.RME	mg/kg	See Table 3.5.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	20	days/year	(4)	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Pond and Ditch	CS	Chemical Concentration in Soil	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(5)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Pond and Ditch	CS	Chemical Concentration in Soil	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(5)	
				ED	Exposure Duration	10	years	EPA, 2000	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	
Dermal	Military Personnel	Adult	Pond	CS	Chemical Concentration in Soil	See Table 3.5.RME	mg/kg	See Table 3.5.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (6)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	EPA, 2004 (7)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	12	days/year	(2)	
				ED	Exposure Duration	4	years	(3)	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	

TABLE H 4.4.RME

Values Used for Daily Intake Calculations – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Maintenance Worker	Adult	Pond	CS	Chemical Concentration in Soil	See Table 3.5.RME	mg/kg	See Table 3.5.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004 (8)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	EPA, 2004 (7)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	20	days/year	(4)	
				ED	Exposure Duration	25	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Pond and Ditch	CS	Chemical Concentration in Soil	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (6)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	EPA, 2004 (7)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(5)	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
	Trespasser/Visitor	Youth	Pond and Ditch	CS	Chemical Concentration in Soil	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,000	cm^2	EPA, 2004 (9)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004, (10)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(2)	
				ED	Exposure Duration	10	years	(3)	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

(1) Professional judgment assuming the sediment ingestion rate is the same as the soil ingestion rate.
(2) Professional judgment assuming 2 hours/day, 1 day/month.
(3) Standard tour of duty
(4) Professional judgment assuming maintenance work in and around pond occurs 4 hours/day, 5 days/week for 4 weeks/year.
(5) Professional judgment assuming 1 day/week for 52 weeks/year.
(6) Skin surface area is skin surface area is the skin surface area for adult resident exposed to soil, includes head, hands, forearems, and lower legs.
(7) SSAF is the geometric mean weighted soil adherence factor for pipe layers in wet soil - Exhibit 3-3 of RAGS Part E.
(8) Skin surface area is skin surface area for adult industrial worker exposed to soil, includes head, hands, forearems, and lower legs.
(9) The skin surface area includes hands, forearms, lower legs, and feet.
(10) SSAF is the geometric mean weighted soil adherence factor for children playing in wet soil - Exhibit 3-3 of RAGS Part E.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.5.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	CDI (mg/kg-day) =
				IR-SW	Ingestion Rate of Surface Water	0.01	liters/hr	EPA, 2000	CSW x IR-SW x ET x EF x ED x CF1 x
				ET	Exposure Time	4	hr/day	(1)	1/BW x 1/AT
				EF	Exposure Frequency	20	days/year	(1)	
				ED	Exposure Duration	1	years	EPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
Dermal	Construction Worker	Adult	Pond and Ditch	CSW	Chemical Concentration in Surface Water	See Tables 3.4.RME and 3.6.RME	µg/L	See Tables 3.4.RME and 3.6.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical Specific	dimensionless	EPA, 2004	
				Kp	Permeability Coefficient	Chemical Specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical Specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	Chemical Specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical Specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	4	hr/day	(1)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004 (2)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	20	days/year	(1)	
				ED	Exposure Duration	1	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF1 x CF2
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	L/cm^3	- -	

Notes:

(1) Professional judgment assuming construction work in and around pond occurs 4 hours/day, 5 days/week for 4 weeks/year.
(2) The skin surface area includes hands, forearms, lower legs, and feet.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000: http://www.epa.gov/region4/waste/ots/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. July 2004.
Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.6.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Construction	Adult	Pond and Ditch	CS	Chemical Concentration in Sediment	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	20	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
Dermal	Construction Worker	Adult	Pond and Ditch	CS	Chemical Concentration in Soil	See Tables 3.5.RME and 3.7.RME	mg/kg	See Tables 3.5.RME and 3.7.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004 (3)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.6	mg/cm^2-day	EPA, 2004 (4)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	20	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	

Notes:

(1) Professional judgment assuming the sediment ingestion rate is the same as the soil ingestion rate.
(2) Professional judgment assuming construction work in and around pond occurs 4 hours/day, 5 days/week for 4 weeks/year.
(3) Skin surface area is skin surface area for adult industrial worker exposed to soil, includes head, hands, forearems, and lower legs.
(4) SSAF is the geometric mean weighted soil adherence factor for pipe layers in wet soil - Exhibit 3-3 of RAGS Part E.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.
Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.7.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Child	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	200	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	6	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Carcinogenic
				IR-Sa	Ingestion Rate of Soil-adult	100	mg/day	EPA, 1991	Chronic Daily Intake (CDI) (mg/kg-day) =
				EDa	Exposure Duration adult	24	years	EPA, 1991	CS x IR-S x EF x CF x 1/AT
				BWa	Body Weight adult	70	kg	EPA, 1991	
				IR-Sc	Ingestion Rate of Soil-child	200	mg/day	EPA, 1991	
				EDc	Exposure Duration child	6	years	EPA, 1991	IR-S = (EDc * IR-Sc/ BWc) + (EDa * IR-Sa/BWa)
				BWc	Body Weight child	15	kg	EPA, 1991	
				IR-S	Ingestion Rate of Soil-adjusted	114.29	mg-year/kg-day	- -	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				CF3	Conversion Factor 3	0.000001	kg/mg	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Construction Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	480	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	1	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Military Personnel	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT

TABLE H 4.7.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000, (4)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

TABLE H 4.7.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Resident	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Child	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	6	years	EPA, 1991	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	Carcinogenic CDI (mg/kg-day) =
				SAc	Skin Surface Area child	2,800	cm^2	EPA, 2004	CS x SA x DABS x CF3 x EF x 1/AT
				SSAFc	Soil to Skin Adherence Factor child	0.2	mg/cm^2-day	EPA, 2004	
				EDc	Exposure Duration child	6	years	EPA, 1991	SA =
				BWc	Body Weight child	15	kg	EPA, 1991	((EDc * SAc/BWc)*SSAFc) + ((EDa * SAa/BWa)*SSAFa)
				SAa	Skin Surface Area adult	5,700	cm^2	EPA, 2004	
				SSAFa	Soil to Skin Adherence Factor-adult	0.07	mg/cm^2-day	EPA, 2004	
				EDa	Exposure Duration adult	24	years	EPA, 1991	
				BWa	Body Weight adult	70	kg	EPA, 1991	
				SA	Skin Surface Area adjusted	361	cm^2-year/kg-day	---	
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF3	Conversion Factor 3	0.000001	kg/mg	- -	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	

TABLE H 4.7.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Construction Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	250	days/years	Prof. Judgment	
				ED	Exposure Duration	1	years	Prof. Judgment	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Military Personnel	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Industrial Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	

TABLE H 4.7.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Trespasser/Visitor	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.8.RME and 3.10.RME	mg/kg	See Tables 3.8.RME and 3.10.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,200	cm^2	EPA, 2004, (5)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm^2-day	EPA, 2004, (6)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000, (4)	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

* Includes surface and subsurface soil.

(1) Standard tour of duty
(2) Professional judgment assuming maintenance activities performed 1 day/week in industrial area.
(3) Professional judgment assuming trespasser/visitor in industrial area of site 1 day per week for 52 weeks.
(4) Adolescents from 7 to 16 years of age, per EPA 2000.
(5) The skin surface area includes the head, hands, forearms and lower legs for the 7 through 16 year olds.
(6) SSAF is the geometric mean weighted soil adherence for soccer players (teens, 13-15 years old) from EPA, 2004, Exhibit 3-3.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE 4.8.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Resident	Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	24	hour/day	--	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Child	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	24	hour/day	--	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	6	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	24	hr/day	EPA, 2009	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	30	years	EPA, 2002	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Construction Worker	Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	250	days/year	EPA,1991	
				ED	Exposure Duration	1	years	EPA, 2002	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Military Personnel	Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	4	years	(1)	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	

TABLE 4.8.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Industrial Worker	Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	8	hour/day	EPA, 1991	
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	
	Trespasser/Visitor	Adult	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	2	hour/day	(4)	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Youth	Emissions from Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.9.RME and 3.11.RME	mg/kg	See Tables 3.9.RME and 3.11.RME	Exposure Concentration (EC) (mg/m^3) = CA x ET x EF x ED x CF x 1/AT
				CA	Chemical Concentration in Air	calc	mg/m^3	calc	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	calc	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	2	hour/day	(4)	
				EF	Exposure Frequency	52	days/year	(3)	
				ED	Exposure Duration	10	years	EPA, 2000	
				CF	Conversion Factor 1	1/24	day/hr	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

* Surface soil & subsurface soil combined

(1) Standard tour of duty

(2) Professional judgment assuming maintenance activities performed 1 day/week in industrial area.

(3) Professional judgment assuming trespasser/visitor in industrial area of site 1 day per week for 52 weeks.

(4) Professional judgment assuming 2 hours per day.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H 4.9.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.RME - 3.16.RME	µg/L	See Tables 3.12.RME - 3.16.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	2	liters/day	EPA, 1997	CW x IR-W x EF x ED x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Child	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.RME - 3.16.RME	µg/L	See Tables 3.12.RME - 3.16.RME	CDI (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	EPA, 1997	CW x IR-W x EF x ED x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	6	years	EPA, 1991	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.RME - 3.16.RME	µg/L	See Tables 3.12.RME - 3.16.RME	CDI (mg/kg-day) =
				IR-W-A	Ingestion Rate of Water, Adult	2	liters/day	EPA, 1997	CW x IR-W-Adj x EF x CF2 x 1/AT
				IR-W-C	Ingestion Rate of Water, Child	1	liters/day	EPA, 1997	
				IR-W-Adj	Ingestion Rate of Water, Age-adjusted	1.09	liter-year/kg-day	calculated	IR-W-Adj (liter-year/kg-day) =
				EF	Exposure Frequency	350	days/year	EPA, 1991	(ED-C x IR-W-C / BW-C) +
				ED-A	Exposure Duration, Adult	24	years	EPA, 1991	(ED-A x IR-W-A / BW-A)
				ED-C	Exposure Duration, Child	6	years	EPA, 1991	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				BW-A	Body Weight , Adult	70	kg	EPA, 1991	
				BW-C	Body Weight, Child	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Industrial Worker	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.RME - 3.16.RME	µg/L	See Tables 3.12.RME - 3.16.RME	CDI (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	EPA, 1991	CW x IR-W x EF x ED x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	EPA, 1991	
				ED	Exposure Duration	25	years	EPA, 1991	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	

TABLE H 4.9.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Resident	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.RME - 3.16.RME	µg/L	See Tables 3.12.RME - 3.16.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	0.58	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	18,000	cm^2	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF2 x CF3
				EF	Exposure Frequency	350	days/year	EPA, 2004	
				ED	Exposure Duration	24	years	EPA, 2004	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	
		Child	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Table 3.8.RME	µg/L	See Table 3.8.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	1.0	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	6,600	cm^2	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF2 x CF3
				EF	Exposure Frequency	350	days/year	EPA, 2004	
				ED	Exposure Duration	6	years	EPA, 2004	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	15	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	

TABLE H 4.9.RME

Values Used for Daily Intake Calculations – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
		Child/Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Table 3.8.RME	µg/L	See Table 3.8.RME	CDI (mg/kg-day) = DA-Adj x EF x 1/AT
				DAevent-A	Dermally Absorbed Dose per Event, Adult	calculated	mg/cm^2-event	calculated	
				DAevent-C	Dermally Absorbed Dose per Event, Child	calculated	mg/cm^2-event	calculated	DA-Adj = (Daevent-A x SA-A x ED-A x 1/BW-A)
				DA-Adj	Dermally Absorbed Dose, Age-adjusted	calculated	mg-year/event-kg	calculated	+ (Daevent-C x SA-C x ED-C x 1/BW-C)
				FA	Fraction absorbed water	chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}-A	Event Time, Adult	0.58	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				t_{event}-C	Event Time, Child	1.0	hr/event	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				SA-A	Skin Surface Area, Adult	18,000	cm^2	EPA, 2004	x CF2 x CF3
				SA-C	Skin Surface Area, Child	6,600	cm^2	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004	tevent>t*: DAevent (mg/cm2-event) =
				EF	Exposure Frequency	350	days/year	EPA, 2004	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				ED-A	Exposure Duration, Adult	24	years	EPA, 2004	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				ED-C	Exposure Duration, Child	6	years	EPA, 2004	
				BW-A	Body Weight, Adult	70	kg	EPA, 1991	
				BW-C	Body Weight, Child	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	
	Construction Worker	Adult	Surficial Aquifer - Water in Excavation	CW	Chemical Concentration in Water	See Table 3.12.RME	µg/L	See Table 3.12.RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	4	hr/day	(1)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004, (3)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF2 x CF3
				EF	Exposure Frequency	30	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	

Notes:

(1) Professional Judgment based on construction activities that would result in contact with groundwater would occur 4 hrs per day for the RME.

(2) Assumes contact with groundwater during construction could occur 30 days per year.

(3) Skin surface area in contact with groundwater assumed to be hands, forearms, lower legs, and feet.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.

EPA, 2004 . Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.

Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H 4.10.RME
Values Used for Daily Intake Calculations – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Resident	Adult	Surficial, Middle,and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.RME - 3.21.RME	µg/L	See Tables 3.17.RME - 3.21.RME	Chronic Daily Intake (CDI) (mg/m3) =
				CAa	Chemical Concentration in Air	Calculated	mg/m^3	Calculated	CAa x ETa x EDa x EF x CF1 x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				EDa	Exposure Duration	24	years	EPA, 1991	Use Foster & Chrostowski Shower model to
				ETa	Exposure Time	0.58	hr/day	EPA, 2004	calculate Ca-a and Ca-c
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
		Child	Surficial, Middle,and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.RME - 3.21.RME	µg/L	See Tables 3.17.RME - 3.21.RME	Chronic Daily Intake (CDI) (mg/m3) =
				CAc	Chemical Concentration in Air	Calculated	mg/m^3	Calculated	CA_c x ET_c x ED_c x EF x CF1 x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				EDc	Exposure Duration	6	years	EPA, 1991	Use Foster & Chrostowski Shower model to
				ETc	Exposure Time	1	hr/day	EPA, 2004	calculate Ca-a and Ca-c
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Surficial, Middle,and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.RME - 3.21.RME	µg/L	See Tables 3.17.RME - 3.21.RME	Chronic Daily Intake (CDI) (mg/m3) =
				Ca-a	Air Concentration for shower, Adul	Calculated	mg/m^3	Calculated	(CAc x ETc x EDc + CAa x ETa x EDa) x EF x CF1 x 1/AT
				Ca-c	Air Concentration for shower, child	Calculated	mg/m^3	Calculated	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				EDa	Exposure Duration, Adult	24	years	EPA, 1991	Use Foster & Chrostowski Shower model to
				EDc	Exposure Duration, Child	6	years	EPA, 1991	calculate Ca-a and Ca-c
				ETa	Exposure Time	0.58	hr/day	EPA, 2004	
				ETc	Exposure Time	1	hr/day	EPA, 2004	
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Construction Worker	Adult	Surficial Aquifer - Water Vapors in Excavation Pit	CW	Chemical Concentration in Water	See Table 3.17.RME	µg/L	See Table 3.17.RME	Chronic Daily Intake (CDI) (mg/m3) =
				CA	Chemical Concentration in Air	calculated	mg/m^3		CA x ET x EF x ED x CF1 x 1/AT
				ET	Exposure Time	8	hr/day	(1)	
				EF	Exposure Frequency	125	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	CA calculated using two-film model
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	

Notes:
(1) Professional judgment based on construction activities that would occur 8 hrs per day for the RME.
(2) Assumed contact with groundwater during construction project would be 125 days/year.
(3) Assumed that worker would be present 8 hrs per day.
Sources:
EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA, 2004 . Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.
Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Military Worker	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.CTE	mg/kg	See Table 3.1.CTE	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	4	years	(1)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.CTE	mg/kg	See Table 3.1.CTE	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
	Maintenance Worker	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.CTE	mg/kg	See Tables 3.1.CTE and 3.3.CTE	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	26	days/year	(2)	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
	Trespasser/Visitor	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.CTE	mg/kg	See Tables 3.1.CTE and 3.3.CTE	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	26	days/year	(2)	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
		Youth	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.CTE	mg/kg	See Tables 3.1.CTE and 3.3.CTE	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	26	days/year	(2)	
				ED	Exposure Duration	10	years	EPA, 2000, (3)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

TABLE H 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Military Personnel	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.CTE	mg/kg	See Table 3.1.CTE	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	4	years	(1)	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Surface Soil in Industrial Area	CS	Chemical Concentration in Soil	See Table 3.1.CTE	mg/kg	See Table 3.1.CTE	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	9	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
	Maintenance Worker	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Table 3.1.CTE	mg/kg	See Table 3.1.CTE	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	9	years	EPA, 2004	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
	Trespasser/Visitor	Adult	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.CTE	mg/kg	See Tables 3.1.CTE and 3.3.CTE	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	9	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	

TABLE H 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
		Youth	Surface Soil in Industrial Area and Flight Line Area	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.CTE	mg/kg	See Tables 3.1.CTE and 3.3.CTE	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,300	cm^2	EPA, 1997 (3)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.1	mg/cm^2-day	EPA, 2004, (4)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	10	years	(3)	
				BW	Body Weight	45	kg	EPA, 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

* Surface and subsurface soil combined.

(1) Standard tour of duty
(2) Professional judgement assuming 1/2 of an RME exposure.
(3) Adolescents from 7 to 16 years of age, per EPA 2000.
(4) SSAF is the geometric mean weighted soil adherence to legs for Rugby from EPA, 2004, Exhibit 3-3.

Sources:
EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
		Child	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	6	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Carcinogenic
				IR-Sa	Ingestion Rate of Soil-adult	50	mg/day	EPA, 1993	Chronic Daily Intake (CDI) (mg/kg-day) =
				EDa	Exposure Duration adult	9	years	EPA, 2004	CS x IR-S x EF x CF x 1/AT
				BWa	Body Weight adult	70	kg	EPA, 1991	
				IR-Sc	Ingestion Rate of Soil-child	100	mg/day	EPA, 1993	
				EDc	Exposure Duration child	6	years	EPA, 1993	IR-S = (EDc * IR-Sc/ BWc) +
				BWc	Body Weight child	15	kg	EPA, 1991	(EDa * IR-Sa/BWa)
				IR-S	Ingestion Rate of Soil-adjusted	46.43	mg-year/kg-day	- -	
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				CF3	Conversion Factor 3	0.000001	kg/mg	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Construction Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	480	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	125	days/years	(1)	
				ED	Exposure Duration	1	years	Prof. Judgement	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Military Personnel	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	4	years	(2)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	

TABLE H 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Industrial Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1993	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
Dermal	Resident	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	9	years	EPA, 2004	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
		Child	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	6	years	EPA, 1991	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	Carcinogenic CDI (mg/kg-day) =
				SAc	Skin Surface Area child	2,800	cm^2	EPA, 2004	CS x SA x DABS x CF3 x EF x 1/AT
				SSAFc	Soil to Skin Adherence Factor child	0.04	mg/cm^2-day	EPA, 2004	
				EDc	Exposure Duration child	6	years	EPA, 1991	SA =
				BWc	Body Weight child	15	kg	EPA, 1991	((EDc * SAc/BWc)*SSAFc) + ((EDa * SAa/BWa)*SSAFa)
				SAa	Skin Surface Area adult	5,700	cm^2	EPA, 2004	
				SSAFa	Soil to Skin Adherence Factor-adult	0.01	mg/cm^2-day	EPA, 2004	
				EDa	Exposure Duration adult	9	years	EPA, 2004	
				BWa	Body Weight adult	70	kg	EPA, 1991	
				SA	Skin Surface Area adjusted	52.13	cm^2-year/kg-day	---	
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF3	Conversion Factor 3	0.000001	kg/mg	- -	
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	

TABLE H 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Soil*
Exposure Medium: Soil*

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
	Construction Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	125	days/years	(1)	
				ED	Exposure Duration	1	years	Prof. Judgement	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
	Military Personnel	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	- -	
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	4	years	(2)	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	1,460	days	EPA, 1989	
	Industrial Worker	Adult	Soil* from Industrial and Flight Line Areas	CS	Chemical Concentration in Soil	See Tables 3.1.CTE and 3.3.RME	mg/kg	See Tables 3.1.CTE and 3.3.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	9	years	EPA, 2004	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	

Notes:

* Surface and subsurface soil combined.

(1) Professional judgement assuming 1/2 of an RME exposure.
(2) Standard tour of duty

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
EPA, 2000: Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. www.epa.gov/region4/waste/oftecser/healtbul.htm.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.3.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	EPA, 1991	CW x IR-W x EF x ED x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	EPA, 2004	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
	Resident	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1.4	liters/day	EPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 2003	
				ED	Exposure Duration	9	years	EPA, 2004	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
		Child	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	EPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 2003	
				ED	Exposure Duration	6	years	EPA, 2004	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) =
				IR-W-A	Ingestion Rate of Water, Adult	1.4	liters/day	EPA, 1997	CW x IR-W-Adj x EF x CF1 x 1/AT
				IR-W-C	Ingestion Rate of Water, Child	1	liters/day	EPA, 1997	
				IR-W-Adj	Ingestion Rate of Water, Age-adjusted	0.58	liter-year/kg-day	calculated	IR-W-Adj (liter-year/kd-day) =
				EF	Exposure Frequency	234	days/year	EPA, 2003	(ED-C x IR-W-C / BW-C) +
				ED-A	Exposure Duration, Adult	9	years	EPA, 2004	(ED-A x IR-W-A / BW-A)
				ED-C	Exposure Duration	6	years	EPA, 2004	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				BW-A	Body Weight , Adult	70	kg	EPA, 1991	
				BW-C	Body Weight, Child	15	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	

TABLE H 4.3.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Resident	Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	Calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	Chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	Chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	0.25	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	18,000	cm^2	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF2 x CF3
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	9	years	EPA, 2004	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	
		Child	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	Calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	Chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	Chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	Chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}	Event Time	0.33	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	6,600	cm^2	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2004	x CF2 x CF3
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				ED	Exposure Duration	6	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	15	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	

TABLE H 4.3.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
		Child/Adult	Surficial, Middle and Upper Castle-Hayne Aquifer - Tap Water	CW	Chemical Concentration in Water	See Tables 3.12.CTE - 3.16.CTE	µg/L	See Tables 3.12.CTE - 3.16.CTE	CDI (mg/kg-day) = DA-Adj x EF x 1/AT
				DAevent-A	Dermally Absorbed Dose per Event, Adult	Calculated	mg/cm^2-event	calculated	
				DAevent-C	Dermally Absorbed Dose per Event, Child	Calculated	mg/cm^2-event	calculated	DA-Adj = (Daevent-A x SA-A x ED-A x 1/BW-A)
				DA-Adj	Dermally Absorbed Dose, Age-adjusted	Calculated	mg-year/event-kg	calculated	+ (Daevent-C x SA-C x ED-C x 1/BW-C)
				FA	Fraction absorbed water	Chemical specific	dimensionless	EPA, 2004	
				K_p	Permeability Coefficient	Chemical specific	cm/hr	EPA, 2004	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	Chemical specific	hr/event	EPA, 2004	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	Chemical specific	hours	EPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	Chemical specific	dimensionless	EPA, 2004	Organics :
				t_{event}-A	Event Time, Adult	0.25	hr/event	EPA, 2004	tevent<t*: DAevent (mg/cm2-event) =
				t_{event}-C	Event Time, Child	0.33	hr/event	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				SA-A	Skin Surface Area, Adult	18,000	cm^2	EPA, 2004	x CF2 x CF3
				SA-C	Skin Surface Area, Child	6,600	cm^2	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004	tevent>t*: DAevent (mg/cm2-event) =
				EF	Exposure Frequency	234	days/year	EPA, 1993	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				ED-A	Exposure Duration, Adult	9	years	EPA, 2004	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				ED-C	Exposure Duration, Child	6	years	EPA, 1991	
				BW-A	Body Weight, Adult	70	kg	EPA, 1991	
				BW-C	Body Weight, Child	15	ke	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	
	Construction Worker	Adult	Surficial Aquifer - Water in Excavation	CW	Chemical Concentration in Water	See Table 3.12.CTE	µg/L	See Table 3.12.CTE	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical specific	dimensionless	EPA, 2001	
				K_p	Permeability Coefficient	chemical specific	cm/hr	EPA, 2001	Inorganics: DAevent (mg/cm2-event) =
				τ	Lag Time	chemical specific	hr/event	EPA, 2001	Kp x CW x t_{event} x CF2 x CF3
				t*	Time to Reach Steady-state	chemical specific	hours	EPA, 2001	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical specific	dimensionless	EPA, 2001	Organics :
				t_{event}	Event Time	4	hr/day	(1)	tevent<t*: DAevent (mg/cm2-event) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2001, (3)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	EPA, 2001	x CF2 x CF3
				EF	Exposure Frequency	30	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	tevent>t*: DAevent (mg/cm2-event) =
				BW	Body Weight	70	kg	EPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	((1 + 3B + 3B2)/(1+B)2)) x CF2 x CF3
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	
				CF2	Conversion Factor 2	0.001	mg/µg	- -	
				CF3	Conversion Factor 3	0.001	L/cm^3	- -	

Notes:

(1) Professional Judgment based on construction activities that would result in contact with groundwater would occur 4 hrs per day for the RME.
(2) Assumes contact with groundwater during construction could occur 30 days per year.
(3) Skin surface area in contact with groundwater assumed to be hands, forearms, lower legs, and feet.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 2003: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure, Draft.
EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Generated by: D.Stannard/DAY
Checked by: G.Howard-Peebles/DAY

TABLE H 4.4.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CENTRAL TENDENCY EXPOSURE
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Resident	Adult	Surficial, Middle,and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.CTE- 3.20.CTE	µg/L	See Tables 3.17.CTE- 3.20.CTE	Chronic Daily Intake (CDI) (mg/m3) =
				CAa	Chemical Concentration in Air	Calculated	mg/m^3	Calculated	CAa x ETa x EDa x EF x CF1 x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				EDa	Exposure Duration	9	years	EPA, 1993	Use Foster & Chrostowski Shower model to
				ETa	Exposure Time	0.25	hr/day	EPA, 2004	calculate Ca-a and Ca-c
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	EPA, 1989	
		Child	Surficial, Middle and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.CTE- 3.20.CTE	µg/L	See Tables 3.17.CTE- 3.20.CTE	Chronic Daily Intake (CDI) (mg/m3) =
				CAc	Chemical Concentration in Air	Calculated	mg/m^3	Calculated	CA_c x ET_c x ED_c x EF x CF1 x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				EDc	Exposure Duration	6	years	EPA, 1991	Use Foster & Chrostowski Shower model to
				ETc	Exposure Time	0.33	hr/day	EPA, 2004	calculate Ca-a and Ca-c
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	
		Child/Adult	Surficial, Middle and Upper Castle Hayne Aquifer - Water Vapors at Showerhead	CW	Chemical Concentration in Water	See Tables 3.17.CTE- 3.20.CTE	µg/L	See Tables 3.17.CTE- 3.20.CTE	Chronic Daily Intake (CDI) (mg/m3) =
				Ca-a	Air Concentration for shower, Adult	Calculated	mg/m^3	Calculated	(CAc x ETc x EDc + CAa x ETa x EDa)
				Ca-c	Air Concentration for shower, child	Calculated	mg/m^3	Calculated	x EF x CF1 x 1/AT
				EF	Exposure Frequency	234	days/year	EPA, 1993	
				EDa	Exposure Duration, Adult	9	years	EPA, 1993	Use Foster & Chrostowski Shower model to
				EDc	Exposure Duration, Child	6	years	EPA, 1991	calculate Ca-a and Ca-c
				ETa	Exposure Time	0.25	hr/day	EPA, 2004	
				ETc	Exposure Time	0.33	hr/day	EPA, 2004	
				CF1	Conversion Factor 1	1/24	day/hour	- -	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Construction Worker	Adult	Surficial Aquifer - Water Vapors in Excavation Pit	CW	Chemical Concentration in Water	See Table 317.CTE	µg/L	See Table 3.17.CTE	Chronic Daily Intake (CDI) (mg/m3) =
				CA	Chemical Concentration in Air	calculated	mg/m^3		CA x ET x EF x ED x CF1 x 1/AT
				ET	Exposure Time	4	hr/day	(1)	
				EF	Exposure Frequency	125	days/year	(2)	
				ED	Exposure Duration	1	years	EPA, 1991	CA calculated using Virginia Voluntary Remediation
				CF1	Conversion Factor 1	1/24	day/hour	- -	Program Method
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	EPA, 1989	

Notes:

(1) Professional judgment assuming 1/2 RME value for CT.
(2) Assumed contact with groundwater during construction project would be 125 days/year.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
EPA, 2004 . Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.
Generated by: D.Stannard/DAY

Checked by: G.Howard-Peebles/DAY

TABLE H-5.1
Non-cancer Toxicity Data—Oral/Dermal
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
1,1-Dichloroethane	Chronic	2.0E-01	mg/kg-day	Generally > 50%	2.0E-01	mg/kg-day	Kidney	300	PPRTV	9/272006
	Subchronic	NA			NA					
2-Hexanone	Chronic	5.0E-03	mg/kg-day	Generally > 50%	5.0E-03	mg/kg-day	Nervous System	1,000	IRIS	4/17/2010
	Subchronic	NA			NA					
Aluminum	Chronic	1.0E+00	mg/kg-day	NA	1.0E+00	mg/kg-day	Neurological, Developmental	100	PPRTV	10/23/2006
	Subchronic	NA			NA					
Antimony	Chronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	Longevity, Blood	1,000/1	IRIS	4/17/2010
	Subchronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	Whole Body, Blood	1,000	PPRTV	7/29/2008
Arsenic	Chronic	3.0E-04	mg/kg-day	95%	3.0E-04	mg/kg-day	Skin, Vascular	3/1	IRIS	3/05/2010
	Subchronic	3.0E-04	mg/kg-day	95%	3.0E-04	mg/kg-day	Skin, Vascular	3	HEAST	7/01/1997
Benzene	Chronic	4.0E-03	mg/kg-day	Generally > 50%	4.0E-03	mg/kg-day	Blood, Immune	300/1	IRIS	4/21/2010
	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)anthracene	Chronic	NA			NA					
	Subchronic	NA			NA					
Benzo(a)pyrene	Chronic	NA			NA					
	Subchronic	NA			NA					
Benzo(b)fluoranthene	Chronic	NA			NA					
	Subchronic	NA			NA					
Benzo(k)fluoranthene	Chronic	NA			NA					
	Subchronic	NA			NA					
Cadmium	Chronic	5.0E-04	mg/kg-day	5%	2.5E-05	mg/kg-day	Blood	10/1	IRIS	3/05/2010
	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloroform	Chronic	1.0E-02	mg/kg-day	Generally > 50%	1.0E-02	mg/kg-day	Liver	100/1	IRIS	4/21/2010
	Subchronic	1.0E-02	mg/kg/day	Generally > 50%	1.0E-02	mg/kg/day	Liver	1000	HEAST	7/01/1997
Chromium	Chronic	3.0E-03	mg/kg-day	2.5%	7.5E-05	mg/kg-day	Not identified	300/3	IRIS	3/15/2010
	Subchronic	2.0E-02	mg/kg-day	2.5%	5.0E-04	mg/kg-day	Not identified	100	HEAST	7/01/1997
Chrysene	Chronic	NA			NA					
	Subchronic	NA			NA					
cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg/day	Generally > 50%	1.0E-02	mg/kg/day	Blood	3,000	PPRTV	3/1/2006
	Subchronic	1.0E-01	mg/kg/day	Generally > 50%	1.0E-01	mg/kg/day	Blood	300	PPRTV	5/6/2009
Cobalt	Chronic	3.0E-04	mg/kg-day	NA	3.0E-04	mg/kg/day	Thyroid	1,000	PPRTV	8/25/2008
	Subchronic	3.0E-03	mg/kg-day	NA	3.0E-03	mg/kg/day	Thyroid	300	PPRTV	8/25/2008

TABLE H-5.1
Non-cancer Toxicity Data—Oral/Dermal
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Dibenz(a,h)anthracene	Chronic	NA			NA					
	Subchronic	NA			NA					
Dichlorodifluoromethane (Freon-12)	Chronic	2.0E-01	mg/kg-day	Generally > 50%	2.0E-01	mg/kg/day	Decreased Body Weight	100	IRIS	4/21/2010
	Subchronic	9.0E-01	mg/kg-day	Generally > 50%	9.0E-01	mg/kg/day	None Observed	100	HEAST	7/01/1997
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	Generally > 50%	1.0E-01	mg/kg-day	Liver, Kidney	1,000/1	IRIS	4/21/2010
	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	Chronic	NA			NA					
	Subchronic	NA			NA					
Iron	Chronic	7.0E-01	mg/kg-day	NA	7.0E-01	mg/kg-day	Gastrointestinal	1.5	PPRTV	9/11/2006
	Subchronic	7.0E-01	mg/kg-day	NA	7.0E-01	mg/kg-day	Gastrointestinal	1.5	PPRTV	9/11/2006
Manganese	Chronic	2.4E-02	mg/kg-day	4%	9.6E-04	mg/kg-day	CNS	1/1	IRIS	3/15/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	2.0E-02	mg/kg-day	58-89%	2.0E-02	mg/kg-day	Decreased Body Weight	3,000/1	IRIS	4/21/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	Chronic	1.0E-02	mg/kg/day	Generally > 50%	1.0E-02	mg/kg/day	Liver, Body Weight	1,000/1	IRIS	4/21/2010
	Subchronic	1.0E-01	mg/kg/day	Generally > 50%	1.0E-01	mg/kg/day	Liver	100	HEAST	7/1/1997
trans-1,2-Dichloroethene	Chronic	2.0E-02	mg/kg/day	Generally > 50%	2.0E-02	mg/kg/day	Blood	1,000/1	IRIS	4/21/2010
	Subchronic	2.0E-01	mg/kg/day	Generally > 50%	2.0E-01	mg/kg/day	Blood	100	HEAST	7/1/1997
Trichloroethene	Chronic	NA			NA					
	Subchronic	NA			NA					
Vanadium	Chronic	5.0E-03	mg/kg-day	2.6%	1.3E-04	mg/kg-day	Hair, Blood	100	IRIS	3/5/2010
	Subchronic	7.0E-03	mg/kg-day	2.6%	1.8E-04	mg/kg-day	Lifetime	100	HEAST	7/1/1997
Vinyl chloride	Chronic	3.0E-03	mg/kg-day	Generally > 50%	3.0E-03	mg/kg-day	Liver	30/1	IRIS	4/21/2010
	Subchronic	NA			NA					

Notes:

(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment (Final).
Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%.
Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) Adjusted Dermal RfD = RfD (oral) x Absorption Efficiency or ABS_{GI}

(3) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For PPRTV values, the date of the PPRTV toxicity profile.

HEAST- Health Effects Assessment Summary Tables
IRIS - Integrated Risk Information System
NA - Not applicable
PPRTV - Provisional Peer Revied Toxicity Value

Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

TABLE H-5.2
Non-cancer Toxicity Data—Inhalation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
1,1-Dichloroethane	Chronic	NA		NA					
	Subchronic	NA		NA					
2-Hexanone	Chronic	3.0E-02	mg/m^3	1.4E-03	mg/kg-day	Nervous System	3,000	IRIS	04/21/10
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	Chronic	5.0E-03	mg/m^3	1.4E-03	mg/kg-day	Neurological	300	PPRTV	10/23/2006
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	Chronic	NA		NA					
	Subchronic	NA		NA					
Arsenic	Chronic	1.5E-05	mg/m^3	4.3E-06	mg/kg-day	Developmental, Cardiovascular, Nervous System	3/1	Cal EPA	3/15/2010
	Subchronic	NA	NA	NA	NA	N/A	N/A	N/A	N/A
Benzene	Chronic	3.0E-02	mg/m^3	8.6E-03	mg/kg-day	Blood, Immune	300/1	IRIS	4/21/2010
	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)anthracene	Chronic	NA		NA					
	Subchronic	NA		NA					
Benzo(a)pyrene	Chronic	NA		NA					
	Subchronic	NA		NA					
Benzo(b)fluoranthene	Chronic	NA		NA					
	Subchronic	NA		NA					
Benzo(k)fluoranthene	Chronic	NA		NA					
	Subchronic	NA		NA					
Cadmium	Chronic	1.0E-05	mg/m^3	2.9E-06	mg/kg-day	Kidney	N/A	ASTDR	9/08
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	Chronic	9.8E-02	mg/m^3	2.8E-02	mg/kg-day	Liver	N/A	ATSDR MRL (RSL)	5/19/2009
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	Chronic	1.0E-04	mg/m^3	2.9E-05	mg/kg-day	Respiratory System	300/1	IRIS	3/15/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	Chronic	NA		NA					
	Subchronic	NA		NA					
cis-1,2-Dichloroethene	Chronic	NA		NA					
	Subchronic	NA		NA					
Cobalt	Chronic	6.0E-06	mg/m^3	1.7E-06	mg/kg-day	Respiratory System	100	PPRTV	8/25/2008
	Subchronic	2.0E-05	mg/m^3	5.7E-06	mg/kg-day	Respiratory System	100	PPRTV	8/25/2008

TABLE H-5.2
Non-cancer Toxicity Data—Inhalation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
Dibenz(a,h)anthracene	Chronic	NA		NA					
	Subchronic	NA		NA					
Dichlorodifluoromethane (Freon-12)	Chronic	2.0E-01	mg/m^3	5.7E-02	mg/kg-day	Liver	1,000	HEAST	07/01/97
	Subchronic	2.0E+00	mg/m^3	5.7E-01	mg/kg-day	Liver	1,000	HEAST	07/01/97
Ethylbenzene	Chronic	1.0E+00	mg/m^3	2.9E-01	mg/kg-day	Fetus	300	IRIS	4/21/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	Chronic	NA		NA					
	Subchronic	NA		NA					
Iron	Chronic	NA		NA					
	Subchronic	NA		NA					
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	CNS	1,000/1	IRIS	3/5/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	3.0E-03	mg/m^3	8.6E-04	mg/kg-day	Respiratory System	3,000/1	IRIS	4/21/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	Chronic	2.7E-01	mg/m^3	7.7E-02	mg/kg-day	Kidney, Liver	NA	ASTDR	9/97
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	Chronic	6.0E-02	mg/m^3	1.7E-02	mg/kg-day	Respiratory System	300	PPRTV	10/01/2002
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	Chronic	NA		NA					
	Subchronic	NA		NA					
Vanadium	Chronic	NA		NA					
	Subchronic	NA		NA					
Vinyl chloride	Chronic	1.0E-01	mg/m^3	2.9E-02	mg/kg-day	Liver	30/1	IRIS	4/21/2010
	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
(1) Provide equation used for derivation in text.
(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For CalEPA values, the date CalEPA website was searched.
CalEPA - California EPA
HEAST - Health Effects Assessment Summary Tables
IRIS - Integrated Risk Information System
N/A - Not applicable

Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

TABLE H-6.1
Cancer Toxicity Data—Oral/Dermal
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
1,1-Dichloroethane	5.7E-03	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	5.7E-03	$(mg/kg\text{-}day)^{-1}$	C	PPRTV	9/27/2006
2-Hexanone	NA			NA				
Aluminum	NA			NA				
Antimony	NA			NA				
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	95%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	9/15/2008
Benzene	5.5E-02	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	5.5E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/21/2010
Benzo(a)anthracene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Benzo(a)pyrene	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	3/10/2010
Benzo(b)fluoranthene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Benzo(k)fluoranthene	7.3E-02	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E-02	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Cadmium	NA			NA				
Chloroform	3.1E-02	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	3.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	CalEPA (RSL)	4/21/2010
Chromium	5.0E-01	$(mg/kg\text{-}day)^{-1}$	2.5%	1.3E-02	$(mg/kg\text{-}day)^{-1}$	D	New Jersey	3/10/2010
Chrysene	7.3E-03	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E-03	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
cis-1,2-Dichloroethene	NA			NA				
Cobalt	NA			NA				
Dibenz(a,h)anthracene	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Dichlorodifluoromethane (Freon-12)	NA			NA				
Ethylbenzene	1.1E-02	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	1.1E-02	$(mg/kg\text{-}day)^{-1}$	2A	CalEPA (RSL)	5/19/2009
Indeno(1,2,3-cd)pyrene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58%-89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Iron	NA			NA				
Manganese	NA			NA				
Naphthalene	NA			NA				
Tetrachloroethene	5.4E-01	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	5.4E-01	$(mg/kg\text{-}day)^{-1}$	B2	CalEPA	4/21/2010
trans-1,2-Dichloroethene	NA			NA				
Trichloroethene	5.9E-03	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	5.9E-03	$(mg/kg\text{-}day)^{-1}$	2A	CalEPA	4/21/2010
Vanadium	NA			NA				
Vinyl chloride	7.2E-01	$(mg/kg\text{-}day)^{-1}$	Generally > 50%	7.2E-01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/21/2010

Notes:

(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment(Interim). Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) See Risk Assessment text for the derivation of the "Absorbed RfD for Dermal"

CalEPA - California EPA
HEAST - Health Effects Assessment Summary Tables
IRIS - Integrated Risk Information System
NA - Not available
NCEA - National Center for Environmental Assessment
New Jersey - New Jersey EPA

Weight of Evidence definitions:
Group A chemicals (known human carcinogens) are agents for which there is sufficient evidence to support the causal association between exposure to the agents in humans and cancer.
Group B1 chemicals (probable human carcinogens) are agents for which there is limited evidence of possible carcinogenicity in humans.
Group B2 chemicals (probable human carcinogens) are agents for which there is sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans.
Group C chemicals (possible human carcinogens) are agents for which there is limited evidence of carcinogenicity in animals and inadequate or a lack of human data.
Group D chemicals (not classifiable as to human carcinogenicity) are agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.
Group E chemicals (evidence of noncarcinogenicity in humans) are agents for which there is no evidence of carcinogenicity from human or animal studies, or both.

Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

TABLE H-6.2
Cancer Toxicity Data—Inhalation
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units		Source(s)	Date(s) (MM/DD/YYY)
1,1-Dichloroethane	1.6E-06	$(\mu g/m^3)^{-1}$	C	PPRTV	9/27/2006
2-Hexanone	NA				
Aluminum	NA				
Antimony	NA				
Arsenic	4.3E-03	$(\mu g/m^3)^{-1}$	A	IRIS	3/10/2010
Benzene	7.8E-06	$(\mu g/m^3)^{-1}$	A	IRIS	4/21/2010
Benzo(a)anthracene	1.1E-04	$(\mu g/m^3)^{-1}$	2A	Cal EPA	3/10/2010
Benzo(a)pyrene	1.1E-03	$(\mu g/m^3)^{-1}$	2A	Cal EPA	3/10/2010
Benzo(b)fluoranthene	1.1E-04	$(\mu g/m^3)^{-1}$	2B	Cal EPA	3/10/2010
Benzo(k)fluoranthene	1.1E-04	$(\mu g/m^3)^{-1}$	2B	Cal EPA	3/10/2010
Cadmium	1.8E-03	$(\mu g/m^3)^{-1}$	B1	IRIS	3/10/2010
Chloroform	2.3E-05	$(\mu g/m^3)^{-1}$	B2	IRIS	4/21/2010
Chromium	8.4E-02	$(\mu g/m^3)^{-1}$	A	IRIS	3/10/2010
Chrysene	1.1E-05	$(\mu g/m^3)^{-1}$	B2	Cal EPA	3/10/2010
cis-1,2-Dichloroethene	NA				
Cobalt	9.0E-03	$(\mu g/m^3)^{-1}$	B1	PPRTV	8/25/2008
Dibenz(a,h)anthracene	1.2E-03	$(\mu g/m^3)^{-1}$	B2	Cal EPA	3/10/2010
Dichlorodifluoromethane (Freon-12)	NA				
Ethylbenzene	2.5E-06	$(\mu g/m^3)^{-1}$	2A	Cal EPA	4/21/2010
Indeno(1,2,3-cd)pyrene	1.1E-04	$(\mu g/m^3)^{-1}$	B2	Cal EPA	3/10/2010
Iron	NA				
Manganese	NA				
Naphthalene	3.4E-05	$(\mu g/m^3)^{-1}$	C	Cal EPA	4/21/2010
Tetrachloroethene	5.9E-06	$(\mu g/m^3)^{-1}$	2A	CalEPA	4/21/2010
trans-1,2-Dichloroethene	NA				
Trichloroethene	2.0E-06	$(\mu g/m^3)^{-1}$	2A	Cal EPA	4/21/2010
Vanadium	NA				
Vinyl chloride	4.4E-06	$(\mu g/m^3)^{-1}$	A	IRIS	4/21/2010

Notes:

Toxicity values for hexavalent chromium used as surrogate for chromium.

HEAST = Health Effects Assessment Summary Tables
Cal EPA = California EPA
IRIS = Integrated Risk Information System
PPRTV = Provisional Peer-Reviewed Toxicity Value

EPA Group:

A - Human carcinogen
A2 - Suspected human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

TABLE H 7.1.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.6E-01	mg/kg	9.2E-09	mg/kg/day	7.3E-01	mg/kg/day	6.7E-09	1.6E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	7.0E-09	mg/kg/day	7.3E+00	mg/kg/day	5.1E-08	1.2E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	9.0E-09	mg/kg/day	7.3E-01	mg/kg/day	6.6E-09	1.6E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	7.0E-09	mg/kg/day	7.3E-02	mg/kg/day	5.1E-10	1.2E-07	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	1.0E-08	mg/kg/day	7.3E-03	mg/kg/day	7.5E-11	1.8E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	5.4E-08	mg/kg/day	7.3E-01	mg/kg/day	3.9E-08	9.4E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	3.0E-04	mg/kg/day	NA		NA	5.3E-03	mg/kg/day	1.0E+00	mg/kg/day	5.3E-03
				Arsenic	1.8E+00	mg/kg	9.8E-08	mg/kg/day	1.5E+00	mg/kg/day	1.5E-07	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	5.7E-03
				Chromium	1.3E+01	mg/kg	7.1E-07	mg/kg/day	5.0E-01	mg/kg/day	3.5E-07	1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.1E-03
				Cobalt	1.8E+00	mg/kg	1.0E-07	mg/kg/day	NA		NA	1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.0E-03
				Exp. Route Total							6.1E-07					2.1E-02
			Dermal Absorption[2]	Benzo(a)anthracene	1.6E-01	mg/kg	7.9E-09	mg/kg/day	7.3E-01	mg/kg/day	5.8E-09	1.4E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	6.0E-09	mg/kg/day	7.3E+00	mg/kg/day	4.4E-08	1.0E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	7.7E-09	mg/kg/day	7.3E-01	mg/kg/day	5.6E-09	1.4E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	6.0E-09	mg/kg/day	7.3E-02	mg/kg/day	4.4E-10	1.1E-07	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	8.8E-09	mg/kg/day	7.3E-03	mg/kg/day	6.4E-11	1.5E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	4.6E-08	mg/kg/day	7.3E-01	mg/kg/day	3.4E-08	8.1E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	2.0E-06	mg/kg/day	NA		NA	3.5E-05	mg/kg/day	1.0E+00	mg/kg/day	3.5E-05
				Arsenic	1.8E+00	mg/kg	1.9E-08	mg/kg/day	1.5E+00	mg/kg/day	2.9E-08	3.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03
				Chromium	1.3E+01	mg/kg	4.7E-09	mg/kg/day	1.3E-02	mg/kg/day	5.8E-11	8.2E-08	mg/kg/day	7.5E-05	mg/kg/day	1.1E-03
				Cobalt	1.8E+00	mg/kg	6.8E-10	mg/kg/day	NA		NA	1.2E-08	mg/kg/day	3.0E-04	mg/kg/day	4.0E-05
				Exp. Route Total							1.2E-07					2.3E-03
				Exposure Medium Total							7.2E-07					2.3E-02
	Air	Emissions from Surface Soil in Industrial Area	Inhalation	Chromium	9.3E-09	mg/m^3	1.2E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	1.0E-08	2.1E-09	mg/kg/day	1.0E-04	mg/m^3	2.1E-05
				Exp. Route Total							1.0E-08					2.1E-05
				Exposure Medium Total							1.0E-08					2.1E-05
				Surface Soil in Industrial Area Total							7.3E-07					2.3E-02

TABLE H 7.1.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	3.8E-07	mg/kg/day	NA		NA	6.7E-06	mg/kg/day	7.0E-01	mg/kg/day	9.6E-06
										Exp. Route Total	0.0E+00					9.6E-06
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	2.2E-07	mg/kg/day	NA		NA	3.8E-06	mg/kg/day	7.0E-01	mg/kg/day	5.5E-06
										Exp. Route Total	0.0E+00					5.5E-06
										Exposure Point Total	0.0E+00					1.5E-05
										Exposure Medium Total	0.0E+00					1.5E-05
										Surface Water in Pond Total	0.0E+00					1.5E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	4.0E-11	mg/kg/day	7.3E-01	mg/kg/day	2.9E-11	7.0E-10	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.1E-11	mg/kg/day	7.3E+00	mg/kg/day	3.7E-10	8.9E-10	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.0E-10	mg/kg/day	7.3E-01	mg/kg/day	7.4E-11	1.8E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	8.3E-11	mg/kg/day	7.3E-02	mg/kg/day	6.1E-12	1.5E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.1E-10	mg/kg/day	7.3E-03	mg/kg/day	8.0E-13	1.9E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.0E-11	mg/kg/day	7.3E+00	mg/kg/day	1.5E-10	3.5E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	7.8E-11	mg/kg/day	7.3E-01	mg/kg/day	5.7E-11	1.4E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	7.2E-09	mg/kg/day	1.5E+00	mg/kg/day	1.1E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.2E-04
				Chromium	1.4E+01	mg/kg	3.7E-08	mg/kg/day	5.0E-01	mg/kg/day	1.9E-08	6.5E-07	mg/kg/day	3.0E-03	mg/kg/day	2.2E-04
				Iron	7.2E+03	mg/kg	1.9E-05	mg/kg/day	NA		NA	3.4E-04	mg/kg/day	7.0E-01	mg/kg/day	4.8E-04
										Exp. Route Total	3.0E-08					1.1E-03

TABLE H 7.1.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal Absorption	Benzo(a)anthracene	1.5E-02	mg/kg	1.8E-10	mg/kg/day	7.3E-01	mg/kg/day	1.3E-10	3.1E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	2.3E-10	mg/kg/day	7.3E+00	mg/kg/day	1.7E-09	4.0E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	4.5E-10	mg/kg/day	7.3E-01	mg/kg/day	3.3E-10	7.9E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	3.7E-10	mg/kg/day	7.3E-02	mg/kg/day	2.7E-11	6.5E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	4.9E-10	mg/kg/day	7.3E-03	mg/kg/day	3.6E-12	8.6E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	8.9E-11	mg/kg/day	7.3E+00	mg/kg/day	6.5E-10	1.6E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	3.5E-10	mg/kg/day	7.3E-01	mg/kg/day	2.5E-10	6.1E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	7.4E-09	mg/kg/day	1.5E+00	mg/kg/day	1.1E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.3E-04
				Chromium	1.4E+01	mg/kg	1.3E-09	mg/kg/day	1.3E-02	mg/kg/day	1.6E-11	2.2E-08	mg/kg/day	7.5E-05	mg/kg/day	3.0E-04
				Iron	7.2E+03	mg/kg	6.6E-07	mg/kg/day	NA		NA	1.1E-05	mg/kg/day	7.0E-01	mg/kg/day	1.6E-05
			Exp. Route Total								1.4E-08					7.5E-04
		Exposure Point Total									4.4E-08					1.9E-03
	Exposure Medium Total										4.4E-08					1.9E-03
Sediment in Pond Total											4.4E-08					1.9E-03
Total of Receptor Risks Across All Media											7.8E-07	Total of Receptor Hazards Across All Media				2.5E-02

Notes:

[1] Dermal absorption from surface water calculated on Table H 7.1.RME Supplement A.

[2] Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.001 used for other metals.

TABLE H 7.1.RME SUPPLEMENT A

Calculation of DAevent—Military Personnel and Trespasser/Visitor, Surface Water

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Iron	7.1E+02	1.0E-03	NA	NA	NA	NA	2	1.4E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =

2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =

FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

NA - Not applicable

t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

TABLE H 7.2.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.6E-01	mg/kg	5.8E-08	mg/kg/day	7.3E-01	mg/kg/day	4.2E-08	1.6E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	4.4E-08	mg/kg/day	7.3E+00	mg/kg/day	3.2E-07	1.2E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	5.6E-08	mg/kg/day	7.3E-01	mg/kg/day	4.1E-08	1.6E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	4.4E-08	mg/kg/day	7.3E-02	mg/kg/day	3.2E-09	1.2E-07	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	6.4E-08	mg/kg/day	7.3E-03	mg/kg/day	4.7E-10	1.8E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	3.4E-07	mg/kg/day	7.3E-01	mg/kg/day	2.5E-07	9.4E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	1.9E-03	mg/kg/day	NA		NA	5.3E-03	mg/kg/day	1.0E+00	mg/kg/day	5.3E-03
				Arsenic	1.8E+00	mg/kg	6.1E-07	mg/kg/day	1.5E+00	mg/kg/day	9.2E-07	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	5.7E-03
				Chromium	1.3E+01	mg/kg	4.4E-06	mg/kg/day	5.0E-01	mg/kg/day	2.2E-06	1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.1E-03
				Cobalt	1.8E+00	mg/kg	6.4E-07	mg/kg/day	NA		NA	1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.0E-03
				Exp. Route Total							3.8E-06					2.1E-02
			Dermal Absorption[1]	Benzo(a)anthracene	1.6E-01	mg/kg	4.9E-08	mg/kg/day	7.3E-01	mg/kg/day	3.6E-08	1.4E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	3.7E-08	mg/kg/day	7.3E+00	mg/kg/day	2.7E-07	1.0E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	4.8E-08	mg/kg/day	7.3E-01	mg/kg/day	3.5E-08	1.4E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	3.8E-08	mg/kg/day	7.3E-02	mg/kg/day	2.7E-09	1.1E-07	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	5.5E-08	mg/kg/day	7.3E-03	mg/kg/day	4.0E-10	1.5E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	2.9E-07	mg/kg/day	7.3E-01	mg/kg/day	2.1E-07	8.1E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	1.3E-05	mg/kg/day	NA		NA	3.5E-05	mg/kg/day	1.0E+00	mg/kg/day	3.5E-05
				Arsenic	1.8E+00	mg/kg	1.2E-07	mg/kg/day	1.5E+00	mg/kg/day	1.8E-07	3.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03
				Chromium	1.3E+01	mg/kg	2.9E-08	mg/kg/day	1.3E-02	mg/kg/day	3.7E-10	8.2E-08	mg/kg/day	7.5E-05	mg/kg/day	1.1E-03
				Cobalt	1.8E+00	mg/kg	4.2E-09	mg/kg/day	NA		NA	1.2E-08	mg/kg/day	3.0E-04	mg/kg/day	4.0E-05
				Exp. Route Total							7.4E-07					2.3E-03
				Exposure Medium Total							4.5E-06					2.3E-02
	Air	Emissions from Surface Soil in Industrial Area	Inhalation	Chromium	9.3E-09	mg/m^3	7.6E-09	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	6.4E-07	2.1E-08	mg/kg/day	1.0E-04	mg/m^3	2.1E-04
				Exp. Route Total							6.4E-07					2.1E-04
				Exposure Medium Total							6.4E-07					2.1E-04
				Surface Soil Total							5.2E-06					2.4E-02
				Total of Receptor Risks Across All Media							5.2E-06	Total of Receptor Hazards Across All Media				2.4E-02

Note:

1. Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.001 used for other metals.

TABLE H 7.3.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.6E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.7E-09	3.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	9.1E-09	mg/kg/day	7.3E+00	mg/kg/day	6.6E-08	2.5E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.6E-09	3.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	9.1E-09	mg/kg/day	7.3E-02	mg/kg/day	6.7E-10	2.6E-08	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-03	mg/kg/day	9.7E-11	3.7E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	7.0E-08	mg/kg/day	7.3E-01	mg/kg/day	5.1E-08	2.0E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	3.9E-04	mg/kg/day	NA	mg/kg/day	NA	1.1E-03	mg/kg/day	1.0E+00	mg/kg/day	1.1E-03
				Arsenic	1.8E+00	mg/kg	1.3E-07	mg/kg/day	1.5E+00	mg/kg/day	1.9E-07	3.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
				Chromium	1.3E+01	mg/kg	9.2E-07	mg/kg/day	5.0E-01	mg/kg/day	4.6E-07	2.6E-06	mg/kg/day	3.0E-03	mg/kg/day	8.6E-04
				Cobalt	1.8E+00	mg/kg	1.3E-07	mg/kg/day	NA	mg/kg/day	NA	3.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
										Exp. Route Total	7.9E-07					4.4E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.6E-01	mg/kg	1.0E-08	mg/kg/day	7.3E-01	mg/kg/day	7.5E-09	2.9E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	7.8E-09	mg/kg/day	7.3E+00	mg/kg/day	5.7E-08	2.2E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	1.0E-08	mg/kg/day	7.3E-01	mg/kg/day	7.3E-09	2.8E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	7.8E-09	mg/kg/day	7.3E-02	mg/kg/day	5.7E-10	2.2E-08	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	1.1E-08	mg/kg/day	7.3E-03	mg/kg/day	8.3E-11	3.2E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	6.0E-08	mg/kg/day	7.3E-01	mg/kg/day	4.4E-08	1.7E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	2.6E-06	mg/kg/day	NA	mg/kg/day	NA	7.3E-06	mg/kg/day	1.0E+00	mg/kg/day	7.3E-06
				Arsenic	1.8E+00	mg/kg	2.5E-08	mg/kg/day	1.5E+00	mg/kg/day	3.8E-08	7.1E-08	mg/kg/day	3.0E-04	mg/kg/day	2.4E-04
				Chromium	1.3E+01	mg/kg	6.1E-09	mg/kg/day	1.3E-02	mg/kg/day	7.6E-11	1.7E-08	mg/kg/day	7.5E-05	mg/kg/day	2.3E-04
				Cobalt	1.8E+00	mg/kg	8.8E-10	mg/kg/day	NA	mg/kg/day	NA	2.5E-09	mg/kg/day	3.0E-04	mg/kg/day	8.2E-06
										Exp. Route Total	1.5E-07					4.8E-04
										Exposure Medium Total	9.4E-07					4.9E-03
	Air	Emissions from Surface Soil in Industrial Area	Inhalation	Chromium	9.3E-09	mg/m^3	1.6E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	1.3E-08	4.4E-10	mg/kg/day	1.0E-04	mg/m^3	4.4E-06
										Exp. Route Total	1.3E-08					4.4E-06
										Exposure Medium Total	1.3E-08					4.4E-06
										Surface Soil in Industrial Area Total	9.5E-07					4.9E-03

TABLE H 7.3.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
	Surface Soil	Surface Soil in Flight Line Area	Ingestion	Benzo(a)anthracene	1.9E-01	mg/kg	1.4E-08	mg/kg/day	7.3E-01	mg/kg/day	9.9E-09	3.8E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	1.6E-08	mg/kg/day	7.3E+00	mg/kg/day	1.2E-07	4.6E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	2.1E-08	mg/kg/day	7.3E-01	mg/kg/day	1.5E-08	5.9E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	2.0E-08	mg/kg/day	7.3E-02	mg/kg/day	1.5E-09	5.7E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	1.7E-08	mg/kg/day	7.3E-03	mg/kg/day	1.2E-10	4.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	5.0E-10	mg/kg/day	7.3E+00	mg/kg/day	3.6E-09	1.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-01	mg/kg/day	9.4E-09	3.6E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	9.1E-04	mg/kg/day	NA	mg/kg/day	NA	2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	2.5E-03
				Arsenic	9.3E-01	mg/kg	6.7E-08	mg/kg/day	1.5E+00	mg/kg/day	1.0E-07	1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.3E-04
				Chromium	1.2E+01	mg/kg	8.9E-07	mg/kg/day	5.0E-01	mg/kg/day	4.5E-07	2.5E-06	mg/kg/day	3.0E-03	mg/kg/day	8.3E-04
										Exp. Route Total	7.1E-07					4.0E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.9E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.5E-09	3.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	1.4E-08	mg/kg/day	7.3E+00	mg/kg/day	1.0E-07	4.0E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	1.8E-08	mg/kg/day	7.3E-01	mg/kg/day	1.3E-08	5.0E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	1.7E-08	mg/kg/day	7.3E-02	mg/kg/day	1.3E-09	4.9E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	1.5E-08	mg/kg/day	7.3E-03	mg/kg/day	1.1E-10	4.1E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	4.3E-10	mg/kg/day	7.3E+00	mg/kg/day	3.1E-09	1.2E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	1.1E-08	mg/kg/day	7.3E-01	mg/kg/day	8.1E-09	3.1E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	6.0E-06	mg/kg/day	NA	mg/kg/day	NA	1.7E-05	mg/kg/day	1.0E+00	mg/kg/day	1.7E-05
				Arsenic	9.3E-01	mg/kg	1.3E-08	mg/kg/day	1.5E+00	mg/kg/day	2.0E-08	3.7E-08	mg/kg/day	3.0E-04	mg/kg/day	1.2E-04
				Chromium	1.2E+01	mg/kg	5.9E-09	mg/kg/day	1.3E-02	mg/kg/day	7.4E-11	1.6E-08	mg/kg/day	7.5E-05	mg/kg/day	2.2E-04
										Exp. Route Total	1.6E-07					3.6E-04
										Exposure Medium Total	8.7E-07					4.4E-03
										Surface Soil in Flight Line Area Total	8.7E-07					4.4E-03

TABLE H 7.3.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	8.0E-06	mg/kg/day	NA		NA	2.2E-05	mg/kg/day	7.0E-01	mg/kg/day	3.2E-05
										Exp. Route Total	0.0E+00					3.2E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	4.6E-06	mg/kg/day	NA		NA	1.3E-05	mg/kg/day	7.0E-01	mg/kg/day	1.8E-05
										Exp. Route Total	0.0E+00					1.8E-05
										Exposure Point Total	0.0E+00					5.0E-05
										Exposure Medium Total	0.0E+00					5.0E-05
										Surface Water in Pond Total	0.0E+00					5.0E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	4.2E-10	mg/kg/day	7.3E-01	mg/kg/day	3.1E-10	1.2E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.3E-10	mg/kg/day	7.3E+00	mg/kg/day	3.9E-09	1.5E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.1E-09	mg/kg/day	7.3E-01	mg/kg/day	7.8E-10	3.0E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	8.7E-10	mg/kg/day	7.3E-02	mg/kg/day	6.3E-11	2.4E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.1E-09	mg/kg/day	7.3E-03	mg/kg/day	8.4E-12	3.2E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.1E-10	mg/kg/day	7.3E+00	mg/kg/day	1.5E-09	5.9E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	8.1E-10	mg/kg/day	7.3E-01	mg/kg/day	5.9E-10	2.3E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	7.5E-08	mg/kg/day	1.5E+00	mg/kg/day	1.1E-07	2.1E-07	mg/kg/day	3.0E-04	mg/kg/day	7.0E-04
				Chromium	1.4E+01	mg/kg	3.9E-07	mg/kg/day	5.0E-01	mg/kg/day	1.9E-07	1.1E-06	mg/kg/day	3.0E-03	mg/kg/day	3.6E-04
				Iron	7.2E+03	mg/kg	2.0E-04	mg/kg/day	NA		NA	5.6E-04	mg/kg/day	7.0E-01	mg/kg/day	8.0E-04
										Exp. Route Total	3.1E-07					1.9E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	1.1E-09	mg/kg/day	7.3E-01	mg/kg/day	7.9E-10	3.0E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	1.4E-09	mg/kg/day	7.3E+00	mg/kg/day	1.0E-08	3.8E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	2.0E-09	7.7E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	2.2E-09	mg/kg/day	7.3E-02	mg/kg/day	1.6E-10	6.2E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	3.0E-09	mg/kg/day	7.3E-03	mg/kg/day	2.2E-11	8.3E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	5.4E-10	mg/kg/day	7.3E+00	mg/kg/day	3.9E-09	1.5E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	2.1E-09	mg/kg/day	7.3E-01	mg/kg/day	1.5E-09	5.8E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	4.5E-08	mg/kg/day	1.5E+00	mg/kg/day	6.7E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.2E-04
				Chromium	1.4E+01	mg/kg	7.6E-09	mg/kg/day	1.3E-02	mg/kg/day	9.5E-11	2.1E-08	mg/kg/day	7.5E-05	mg/kg/day	2.9E-04
				Iron	7.2E+03	mg/kg	4.0E-06	mg/kg/day	NA		NA	1.1E-05	mg/kg/day	7.0E-01	mg/kg/day	1.6E-05
										Exp. Route Total	8.6E-08					7.2E-04
										Exposure Point Total	4.0E-07					2.6E-03
										Sediment in Pond Total	4.0E-07					2.6E-03

TABLE H 7.3.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Ingestion	Benzo(a)anthracene	2.6E+00	mg/kg	7.3E-08	mg/kg/day	7.3E-01	mg/kg/day	5.3E-08	2.0E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	1.0E-07	mg/kg/day	7.3E+00	mg/kg/day	7.4E-07	2.9E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	2.1E-07	mg/kg/day	7.3E-01	mg/kg/day	1.5E-07	5.8E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	6.4E-08	mg/kg/day	7.3E-02	mg/kg/day	4.7E-09	1.8E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	1.2E-07	mg/kg/day	7.3E-03	mg/kg/day	8.6E-10	3.3E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	2.5E-09	mg/kg/day	7.3E+00	mg/kg/day	1.8E-08	6.9E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	9.7E-08	mg/kg/day	7.3E-01	mg/kg/day	7.1E-08	2.7E-07	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	4.3E-04	mg/kg/day	NA	mg/kg/day	NA	1.2E-03	mg/kg/day	1.0E+00	mg/kg/day	1.2E-03
				Antimony	3.8E+00	mg/kg	1.1E-07	mg/kg/day	NA	mg/kg/day	NA	2.9E-07	mg/kg/day	4.0E-04	mg/kg/day	7.4E-04
				Arsenic	5.3E+00	mg/kg	1.5E-07	mg/kg/day	1.5E+00	mg/kg/day	2.2E-07	4.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.4E-03
				Cadmium	5.8E+00	mg/kg	1.6E-07	mg/kg/day	NA	mg/kg/day	NA	4.6E-07	mg/kg/day	5.0E-04	mg/kg/day	9.1E-04
				Chromium	3.0E+01	mg/kg	8.5E-07	mg/kg/day	5.0E-01	mg/kg/day	4.3E-07	2.4E-06	mg/kg/day	3.0E-03	mg/kg/day	7.9E-04
				Cobalt	6.0E+00	mg/kg	1.7E-07	mg/kg/day	NA	mg/kg/day	NA	4.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.6E-03
				Iron	1.8E+04	mg/kg	5.1E-04	mg/kg/day	NA	mg/kg/day	NA	1.4E-03	mg/kg/day	7.0E-01	mg/kg/day	2.0E-03
				Vanadium	3.7E+01	mg/kg	1.0E-06	mg/kg/day	NA	mg/kg/day	NA	2.9E-06	mg/kg/day	5.0E-03	mg/kg/day	5.8E-04
										Exp. Route Total	1.7E-06					9.2E-03

TABLE H 7.3.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Dermal Absorption[2]	Benzo(a)anthracene	2.6E+00	mg/kg	1.9E-07	mg/kg/day	7.3E-01	mg/kg/day	1.4E-07	5.2E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	2.6E-07	mg/kg/day	7.3E+00	mg/kg/day	1.9E-06	7.3E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	5.4E-07	mg/kg/day	7.3E-01	mg/kg/day	3.9E-07	1.5E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	1.6E-07	mg/kg/day	7.3E-02	mg/kg/day	1.2E-08	4.6E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	3.0E-07	mg/kg/day	7.3E-03	mg/kg/day	2.2E-09	8.5E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	6.4E-09	mg/kg/day	7.3E+00	mg/kg/day	4.7E-08	1.8E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	2.5E-07	mg/kg/day	7.3E-01	mg/kg/day	1.8E-07	7.0E-07	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	8.5E-06	mg/kg/day	NA	mg/kg/day	NA	2.4E-05	mg/kg/day	1.0E+00		2.4E-05
				Antimony	3.8E+00	mg/kg	2.1E-09	mg/kg/day	NA	mg/kg/day	NA	5.8E-09	mg/kg/day	6.0E-05		9.7E-05
				Arsenic	5.3E+00	mg/kg	8.8E-08	mg/kg/day	1.5E+00	mg/kg/day	1.3E-07	2.5E-07	mg/kg/day	3.0E-04		8.2E-04
				Cadmium	5.8E+00	mg/kg	3.2E-09	mg/kg/day	NA	mg/kg/day	NA	9.0E-09	mg/kg/day	2.5E-05		3.6E-04
				Chromium	3.0E+01	mg/kg	1.7E-08	mg/kg/day	1.3E-02	mg/kg/day	2.1E-10	4.7E-08	mg/kg/day	7.5E-05		6.3E-04
				Cobalt	6.0E+00	mg/kg	3.3E-09	mg/kg/day	NA	mg/kg/day	NA	9.3E-09	mg/kg/day	3.0E-04		3.1E-05
				Iron	1.8E+04	mg/kg	1.0E-05	mg/kg/day	NA	mg/kg/day	NA	2.8E-05	mg/kg/day	7.0E-01		4.0E-05
				Vanadium	3.7E+01	mg/kg	2.1E-08	mg/kg/day	NA	mg/kg/day	NA	5.8E-08	mg/kg/day	1.3E-04		4.5E-04
			Exp. Route Total								2.8E-06					2.4E-03
		Exposure Point Total									4.5E-06					1.2E-02
Sediment in Drainage Ditch Total											4.5E-06					1.2E-02
Total of Receptor Risks Across All Media											6.7E-06	Total of Receptor Hazards Across All Media				2.4E-02

Notes:

[1] Dermal absorption from surface water calculated on Table H 7.3.RME Supplement A.

[2] Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.03 used for arsenic, and DABS of 0.001 used for other metals.

TABLE H 7.3.RME SUPPLEMENT A

Calculation of DAevent—Adult Maintenance Worker, Surface Water

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Iron	7.1E+02	1.0E-03	NA	NA	NA	NA	4	2.9E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =

2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =

FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

NA - Not applicable

t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

TABLE H 7.4.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.6E-01	mg/kg	1.1E-08	mg/kg/day	7.3E-01	mg/kg/day	8.4E-09	3.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	8.7E-09	mg/kg/day	7.3E+00	mg/kg/day	6.3E-08	2.5E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	1.1E-08	mg/kg/day	7.3E-01	mg/kg/day	8.2E-09	3.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	8.8E-09	mg/kg/day	7.3E-02	mg/kg/day	6.4E-10	2.6E-08	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-03	mg/kg/day	9.3E-11	3.7E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	6.7E-08	mg/kg/day	7.3E-01	mg/kg/day	4.9E-08	2.0E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	3.8E-04	mg/kg/day	NA	mg/kg/day	NA	1.1E-03	mg/kg/day	1.0E+00	mg/kg/day	1.1E-03
				Arsenic	1.8E+00	mg/kg	1.2E-07	mg/kg/day	1.5E+00	mg/kg/day	1.8E-07	3.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
				Chromium	1.3E+01	mg/kg	8.8E-07	mg/kg/day	5.0E-01	mg/kg/day	4.4E-07	2.6E-06	mg/kg/day	3.0E-03	mg/kg/day	8.6E-04
				Cobalt	1.8E+00	mg/kg	1.3E-07	mg/kg/day	NA	mg/kg/day	NA	3.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
										Exp. Route Total	7.6E-07					4.4E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.6E-01	mg/kg	6.0E-09	mg/kg/day	7.3E-01	mg/kg/day	4.4E-09	1.7E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	4.5E-09	mg/kg/day	7.3E+00	mg/kg/day	3.3E-08	1.3E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	5.8E-09	mg/kg/day	7.3E-01	mg/kg/day	4.3E-09	1.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	4.5E-09	mg/kg/day	7.3E-02	mg/kg/day	3.3E-10	1.3E-08	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	6.6E-09	mg/kg/day	7.3E-03	mg/kg/day	4.8E-11	1.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	3.5E-08	mg/kg/day	7.3E-01	mg/kg/day	2.5E-08	1.0E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	1.5E-06	mg/kg/day	NA	mg/kg/day	NA	4.4E-06	mg/kg/day	1.0E+00	mg/kg/day	4.4E-06
				Arsenic	1.8E+00	mg/kg	1.5E-08	mg/kg/day	1.5E+00	mg/kg/day	2.2E-08	4.3E-08	mg/kg/day	3.0E-04	mg/kg/day	1.4E-04
				Chromium	1.3E+01	mg/kg	3.5E-09	mg/kg/day	1.3E-02	mg/kg/day	4.4E-11	1.0E-08	mg/kg/day	7.5E-05	mg/kg/day	1.4E-04
				Cobalt	1.8E+00	mg/kg	5.1E-10	mg/kg/day	NA	mg/kg/day	NA	1.5E-09	mg/kg/day	3.0E-04	mg/kg/day	5.0E-06
										Exp. Route Total	8.9E-08					2.9E-04
										Exposure Medium Total	8.5E-07					4.7E-03
	Air	Emissions from Surface Soil in Industrial Area	Inhalation	Chromium	9.3E-09	mg/m^3	3.8E-11	mg/m^3	8.4E-02	$(\mu g/m^3)^{-1}$	3.2E-09	1.1E-10	mg/m^3	1.0E-04	mg/m^3	1.1E-06
										Exp. Route Total	3.2E-09					1.1E-06
										Exposure Medium Total	3.2E-09					1.1E-06
										Surface Soil in Industrial Area Total	8.5E-07					4.7E-03

TABLE H 7.4.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Flight Line Area	Ingestion	Benzo(a)anthracene	1.9E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-01	mg/kg/day	9.5E-09	3.8E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	1.6E-08	mg/kg/day	7.3E+00	mg/kg/day	1.2E-07	4.6E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	2.0E-08	mg/kg/day	7.3E-01	mg/kg/day	1.5E-08	5.9E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	2.0E-08	mg/kg/day	7.3E-02	mg/kg/day	1.4E-09	5.7E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	1.6E-08	mg/kg/day	7.3E-03	mg/kg/day	1.2E-10	4.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	4.8E-10	mg/kg/day	7.3E+00	mg/kg/day	3.5E-09	1.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	9.0E-09	3.6E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	8.7E-04	mg/kg/day	NA	mg/kg/day	NA	2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	2.5E-03
				Arsenic	9.3E-01	mg/kg	6.5E-08	mg/kg/day	1.5E+00	mg/kg/day	9.7E-08	1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.3E-04
				Chromium	1.2E+01	mg/kg	8.6E-07	mg/kg/day	5.0E-01	mg/kg/day	4.3E-07	2.5E-06	mg/kg/day	3.0E-03	mg/kg/day	8.3E-04
										Exp. Route Total	6.8E-07					4.0E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.9E-01	mg/kg	6.8E-09	mg/kg/day	7.3E-01	mg/kg/day	4.9E-09	2.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	8.2E-09	mg/kg/day	7.3E+00	mg/kg/day	6.0E-08	2.4E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	1.0E-08	mg/kg/day	7.3E-01	mg/kg/day	7.6E-09	3.0E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	1.0E-08	mg/kg/day	7.3E-02	mg/kg/day	7.4E-10	3.0E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	8.5E-09	mg/kg/day	7.3E-03	mg/kg/day	6.2E-11	2.5E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	2.5E-10	mg/kg/day	7.3E+00	mg/kg/day	1.8E-09	7.2E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	6.4E-09	mg/kg/day	7.3E-01	mg/kg/day	4.7E-09	1.9E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	3.5E-06	mg/kg/day	NA	mg/kg/day	NA	1.0E-05	mg/kg/day	1.0E+00	mg/kg/day	1.0E-05
				Arsenic	9.3E-01	mg/kg	7.8E-09	mg/kg/day	1.5E+00	mg/kg/day	1.2E-08	2.3E-08	mg/kg/day	3.0E-04	mg/kg/day	7.5E-05
				Chromium	1.2E+01	mg/kg	3.4E-09	mg/kg/day	1.3E-02	mg/kg/day	4.3E-11	1.0E-08	mg/kg/day	7.5E-05	mg/kg/day	1.3E-04
										Exp. Route Total	9.1E-08					2.2E-04
										Exposure Medium Total	7.7E-07					4.2E-03
										Surface Soil in Flight Line Area Total	7.7E-07					4.2E-03
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	1.0E-05	mg/kg/day	NA		NA	2.9E-05	mg/kg/day	7.0E-01	mg/kg/day	4.2E-05
										Exp. Route Total	0.0E+00					4.2E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	5.7E-06	mg/kg/day	NA		NA	1.7E-05	mg/kg/day	7.0E-01	mg/kg/day	2.4E-05
										Exp. Route Total	0.0E+00					2.4E-05
										Exposure Point Total	0.0E+00					6.5E-05
										Exposure Medium Total	0.0E+00					6.5E-05
										Surface Water in Pond Total	0.0E+00					6.5E-05

TABLE H 7.4.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	1.0E-09	mg/kg/day	7.3E-01	mg/kg/day	7.6E-10	3.1E-09	mg/kg/day	NA	mg/kg/day	NA
				Benzo(a)pyrene	1.9E-02	mg/kg	1.3E-09	mg/kg/day	7.3E+00	mg/kg/day	9.7E-09	3.9E-09	mg/kg/day	NA	mg/kg/day	NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	1.9E-09	7.7E-09	mg/kg/day	NA	mg/kg/day	NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	2.2E-09	mg/kg/day	7.3E-02	mg/kg/day	1.6E-10	6.3E-09	mg/kg/day	NA	mg/kg/day	NA
				Chrysene	4.1E-02	mg/kg	2.9E-09	mg/kg/day	7.3E-03	mg/kg/day	2.1E-11	8.3E-09	mg/kg/day	NA	mg/kg/day	NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	5.2E-10	mg/kg/day	7.3E+00	mg/kg/day	3.8E-09	1.5E-09	mg/kg/day	NA	mg/kg/day	NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	2.0E-09	mg/kg/day	7.3E-01	mg/kg/day	1.5E-09	5.9E-09	mg/kg/day	NA	mg/kg/day	NA
				Arsenic	2.7E+00	mg/kg	1.9E-07	mg/kg/day	1.5E+00	mg/kg/day	2.8E-07	5.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.8E-03
				Chromium	1.4E+01	mg/kg	9.6E-07	mg/kg/day	5.0E-01	mg/kg/day	4.8E-07	2.8E-06	mg/kg/day	3.0E-03	mg/kg/day	9.4E-04
				Iron	7.2E+03	mg/kg	5.0E-04	mg/kg/day	NA		NA	1.5E-03	mg/kg/day	7.0E-01	mg/kg/day	2.1E-03
										Exp. Route Total	7.8E-07					4.8E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	4.7E-09	mg/kg/day	7.3E-01	mg/kg/day	3.4E-09	1.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.9E-09	mg/kg/day	7.3E+00	mg/kg/day	4.3E-08	1.7E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.6E-09	3.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	9.6E-09	mg/kg/day	7.3E-02	mg/kg/day	7.0E-10	2.8E-08	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.3E-08	mg/kg/day	7.3E-03	mg/kg/day	9.3E-11	3.7E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.3E-09	mg/kg/day	7.3E+00	mg/kg/day	1.7E-08	6.8E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	9.0E-09	mg/kg/day	7.3E-01	mg/kg/day	6.6E-09	2.6E-08	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.9E-07	mg/kg/day	1.5E+00	mg/kg/day	2.9E-07	5.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
				Chromium	1.4E+01	mg/kg	3.3E-08	mg/kg/day	1.3E-02	mg/kg/day	4.1E-10	9.6E-08	mg/kg/day	7.5E-05	mg/kg/day	1.3E-03
				Iron	7.2E+03	mg/kg	1.7E-05	mg/kg/day	NA		NA	5.0E-05	mg/kg/day	7.0E-01	mg/kg/day	7.1E-05
										Exp. Route Total	3.7E-07					3.2E-03
										Exposure Point Total	1.2E-06					8.1E-03
										Sediment in Pond Total	1.2E-06					8.1E-03

TABLE H 7.4.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Ingestion	Benzo(a)anthracene	2.6E+00	mg/kg	1.8E-07	mg/kg/day	7.3E-01	mg/kg/day	1.3E-07	5.3E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	2.5E-07	mg/kg/day	7.3E+00	mg/kg/day	1.9E-06	7.4E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	5.2E-07	mg/kg/day	7.3E-01	mg/kg/day	3.8E-07	1.5E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	1.6E-07	mg/kg/day	7.3E-02	mg/kg/day	1.2E-08	4.7E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	2.9E-07	mg/kg/day	7.3E-03	mg/kg/day	2.1E-09	8.5E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	6.2E-09	mg/kg/day	7.3E+00	mg/kg/day	4.5E-08	1.8E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	2.4E-07	mg/kg/day	7.3E-01	mg/kg/day	1.8E-07	7.0E-07	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	1.1E-03	mg/kg/day	NA	mg/kg/day	NA	3.1E-03	mg/kg/day	1.0E+00	mg/kg/day	3.1E-03
				Antimony	3.8E+00	mg/kg	2.6E-07	mg/kg/day	NA	mg/kg/day	NA	7.6E-07	mg/kg/day	4.0E-04	mg/kg/day	1.9E-03
				Arsenic	5.3E+00	mg/kg	3.7E-07	mg/kg/day	1.5E+00	mg/kg/day	5.5E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	3.6E-03
				Cadmium	5.8E+00	mg/kg	4.1E-07	mg/kg/day	NA	mg/kg/day	NA	1.2E-06	mg/kg/day	5.0E-04	mg/kg/day	2.4E-03
				Chromium	3.0E+01	mg/kg	2.1E-06	mg/kg/day	5.0E-01	mg/kg/day	1.1E-06	6.2E-06	mg/kg/day	3.0E-03	mg/kg/day	2.1E-03
				Cobalt	6.0E+00	mg/kg	4.2E-07	mg/kg/day	NA	mg/kg/day	NA	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.1E-03
				Iron	1.8E+04	mg/kg	1.3E-03	mg/kg/day	NA	mg/kg/day	NA	3.7E-03	mg/kg/day	7.0E-01	mg/kg/day	5.3E-03
				Vanadium	3.7E+01	mg/kg	2.6E-06	mg/kg/day	NA	mg/kg/day	NA	7.6E-06	mg/kg/day	5.0E-03	mg/kg/day	1.5E-03
										Exp. Route Total	4.2E-06					2.4E-02
			Dermal Absorption[2]	Benzo(a)anthracene	2.6E+00	mg/kg	8.1E-07	mg/kg/day	7.3E-01	mg/kg/day	5.9E-07	2.3E-06	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	1.1E-06	mg/kg/day	7.3E+00	mg/kg/day	8.3E-06	3.3E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	2.3E-06	mg/kg/day	7.3E-01	mg/kg/day	1.7E-06	6.7E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	7.1E-07	mg/kg/day	7.3E-02	mg/kg/day	5.2E-08	2.1E-06	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	1.3E-06	mg/kg/day	7.3E-03	mg/kg/day	9.5E-09	3.8E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	2.7E-08	mg/kg/day	7.3E+00	mg/kg/day	2.0E-07	8.0E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	1.1E-06	mg/kg/day	7.3E-01	mg/kg/day	7.8E-07	3.1E-06	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	3.7E-05	mg/kg/day	NA	mg/kg/day	NA	1.1E-04	mg/kg/day	1.0E+00		1.1E-04
				Antimony	3.8E+00	mg/kg	9.0E-09	mg/kg/day	NA	mg/kg/day	NA	2.6E-08	mg/kg/day	6.0E-05		4.4E-04
				Arsenic	5.3E+00	mg/kg	3.8E-07	mg/kg/day	1.5E+00	mg/kg/day	5.7E-07	1.1E-06	mg/kg/day	3.0E-04		3.7E-03
				Cadmium	5.8E+00	mg/kg	1.4E-08	mg/kg/day	NA	mg/kg/day	NA	4.1E-08	mg/kg/day	2.5E-05		1.6E-03
				Chromium	3.0E+01	mg/kg	7.3E-08	mg/kg/day	1.3E-02	mg/kg/day	9.1E-10	2.1E-07	mg/kg/day	7.5E-05		2.8E-03
				Cobalt	6.0E+00	mg/kg	1.4E-08	mg/kg/day	NA	mg/kg/day	NA	4.2E-08	mg/kg/day	3.0E-04		1.4E-04
				Iron	1.8E+04	mg/kg	4.3E-05	mg/kg/day	NA	mg/kg/day	NA	1.3E-04	mg/kg/day	7.0E-01		1.8E-04
				Vanadium	3.7E+01	mg/kg	8.9E-08	mg/kg/day	NA	mg/kg/day	NA	2.6E-07	mg/kg/day	1.3E-04		2.0E-03
										Exp. Route Total	1.2E-05					1.1E-02
										Exposure Point Total	1.6E-05					3.5E-02
										Sediment in Drainage Ditch Total	1.6E-05					3.5E-02

TABLE H 7.4.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Surface Water in Drainage Ditch	Ingestion	Benzo(a)anthracene	1.5E-01	µg/L	2.1E-09	mg/kg/day	7.3E-01	mg/kg/day	1.5E-09	6.1E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.4E-02	µg/L	4.7E-10	mg/kg/day	7.3E+00	mg/kg/day	3.5E-09	1.4E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	8.3E-02	µg/L	1.2E-09	mg/kg/day	7.3E-01	mg/kg/day	8.5E-10	3.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	6.8E-02	µg/L	9.5E-10	mg/kg/day	7.3E-01	mg/kg/day	6.9E-10	2.8E-09	mg/kg/day	NA		NA
				Naphthalene	1.1E-01	µg/L	1.5E-09	mg/kg/day	NA		NA	4.4E-09	mg/kg/day	2.0E-02	mg/kg/day	2.2E-07
				Aluminum	2.0E+03	µg/L	2.7E-05	mg/kg/day	NA		NA	8.0E-05	mg/kg/day	1.0E+00	mg/kg/day	8.0E-05
				Iron	1.6E+00	µg/L	2.2E-08	mg/kg/day	NA		NA	6.4E-08	mg/kg/day	7.0E-01	mg/kg/day	9.2E-08
				Manganese	1.1E+01	µg/L	1.5E-07	mg/kg/day	NA		NA	4.5E-07	mg/kg/day	2.4E-02	mg/kg/day	1.9E-05
				Vanadium	3.3E+04	µg/L	4.6E-04	mg/kg/day	NA		NA	1.3E-03	mg/kg/day	5.0E-03	mg/kg/day	2.7E-01
										Exp. Route Total	6.5E-09					2.7E-01
			Dermal Absorption[3]	Benzo(a)anthracene	1.5E-01	µg/L	1.6E-06	mg/kg/day	7.3E-01		1.1E-06	4.6E-06	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.4E-02	µg/L	6.1E-07	mg/kg/day	7.3E+00		4.4E-06	1.8E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	8.3E-02	µg/L	1.5E-06	mg/kg/day	7.3E-01		1.1E-06	4.4E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	6.8E-02	µg/L	1.2E-06	mg/kg/day	7.3E-01		9.0E-07	3.6E-06	mg/kg/day	NA		NA
				Naphthalene	1.1E-01	µg/L	6.1E-08	mg/kg/day	NA		NA	1.8E-07	mg/kg/day	2.0E-02	mg/kg/day	8.8E-06
				Aluminum	2.0E+03	µg/L	1.6E-05	mg/kg/day	NA		NA	4.5E-05	mg/kg/day	1.0E+00	mg/kg/day	4.5E-05
				Iron	1.6E+00	µg/L	2.6E-04	mg/kg/day	NA		NA	7.7E-04	mg/kg/day	7.0E-01	mg/kg/day	1.1E-03
				Manganese	1.1E+01	µg/L	3.0E-06	mg/kg/day	NA		NA	8.7E-06	mg/kg/day	9.6E-04	mg/kg/day	9.0E-03
				Vanadium	3.3E+04	µg/L	1.8E-07	mg/kg/day	NA		NA	5.1E-07	mg/kg/day	1.3E-04	mg/kg/day	3.9E-03
										Exp. Route Total	7.6E-06					1.4E-02
										Exposure Point Total	7.6E-06					2.8E-01
										Exposure Medium Total	7.6E-06					2.8E-01
										Surface Water in Drainage Ditch Total	7.6E-06					2.8E-01
										Total of Receptor Risks Across All Media	2.7E-05	Total of Receptor Hazards Across All Media				3.3E-01

Notes:

[1] Dermal absorption from surface water in pond calculated on Table H 7.1.RME Supplement A.

[2]. Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.03 used for arsenic, and DABS of 0.001 used for other metals.

[3]. Dermal absorption from surface water in drainage ditch calculated on Table H 7.4.RME and 7.5.RME Supplement B.

TABLE H 7.4.RME AND H 7.5.RME SUPPLEMENT A

Calculation of DAevent—Trespasser, Surface Water in Drainage Ditch

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Benzo(a)anthracene	1.5E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	2	3.9E-07	2
Benzo(a)pyrene	3.4E-02	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	2	1.5E-07	2
Benzo(b)fluoranthene	8.3E-02	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	2	3.8E-07	2
Indeno(1,2,3-cd)pyrene	6.8E-02	1.0E+00	6.7E+00	3.8E+00	1.7E+01	6.0E-01	2	3.1E-07	2
Naphthalene	1.1E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	2	1.5E-08	3
Aluminum	2.0E+03	1.0E-03	NA	NA	NA	NA	2	3.9E-06	1
Iron	3.3E+04	1.0E-03	NA	NA	NA	NA	2	6.6E-05	1
Manganese	3.7E+02	1.0E-03	NA	NA	NA	NA	2	7.5E-07	1
Vanadium	2.2E+01	1.0E-03	NA	NA	NA	NA	2	4.4E-08	1

Inorganics: DA_{event} (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/µg $\times 0.001$ L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If $t_{event} < t^*$, then DA_{event} =

$2 \times FA \times Kp \times CW \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event})/\pi)) \times 0.001$ mg/µg $\times 0.001$ L/cm^3 (eq 2)

If $t_{event} > t^*$, then DA_{event} =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001$ mg/µg $\times 0.001$ L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

NA - Not applicable

t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.6E-01	mg/kg	7.5E-09	mg/kg/day	7.3E-01	mg/kg/day	5.4E-09	5.2E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	5.6E-09	mg/kg/day	7.3E+00	mg/kg/day	4.1E-08	3.9E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	7.3E-09	mg/kg/day	7.3E-01	mg/kg/day	5.3E-09	5.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	5.7E-09	mg/kg/day	7.3E-02	mg/kg/day	4.1E-10	4.0E-08	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	8.3E-09	mg/kg/day	7.3E-03	mg/kg/day	6.0E-11	5.8E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	4.4E-08	mg/kg/day	7.3E-01	mg/kg/day	3.2E-08	3.1E-07	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	2.5E-04	mg/kg/day	NA	mg/kg/day	NA	1.7E-03	mg/kg/day	1.0E+00	mg/kg/day	1.7E-03
				Arsenic	1.8E+00	mg/kg	8.0E-08	mg/kg/day	1.5E+00	mg/kg/day	1.2E-07	5.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
				Chromium	1.3E+01	mg/kg	5.7E-07	mg/kg/day	5.0E-01	mg/kg/day	2.9E-07	4.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.3E-03
				Cobalt	1.8E+00	mg/kg	8.3E-08	mg/kg/day	NA	mg/kg/day	NA	5.8E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
										Exp. Route Total	4.9E-07					6.8E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.6E-01	mg/kg	1.6E-09	mg/kg/day	7.3E-01	mg/kg/day	1.2E-09	1.1E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.2E-01	mg/kg	1.2E-09	mg/kg/day	7.3E+00	mg/kg/day	9.0E-09	8.6E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	1.6E-01	mg/kg	1.6E-09	mg/kg/day	7.3E-01	mg/kg/day	1.2E-09	1.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	1.3E-01	mg/kg	1.2E-09	mg/kg/day	7.3E-02	mg/kg/day	9.0E-11	8.7E-09	mg/kg/day	NA		NA
				Chrysene	1.8E-01	mg/kg	1.8E-09	mg/kg/day	7.3E-03	mg/kg/day	1.3E-11	1.3E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	9.6E-01	mg/kg	9.5E-09	mg/kg/day	7.3E-01	mg/kg/day	7.0E-09	6.7E-08	mg/kg/day	NA		NA
				Aluminum	5.4E+03	mg/kg	4.1E-07	mg/kg/day	NA	mg/kg/day	NA	2.9E-06	mg/kg/day	1.0E+00	mg/kg/day	2.9E-06
				Arsenic	1.8E+00	mg/kg	4.0E-09	mg/kg/day	1.5E+00	mg/kg/day	6.0E-09	2.8E-08	mg/kg/day	3.0E-04	mg/kg/day	9.4E-05
				Chromium	1.3E+01	mg/kg	9.6E-10	mg/kg/day	1.3E-02	mg/kg/day	1.2E-11	6.7E-09	mg/kg/day	7.5E-05	mg/kg/day	9.0E-05
				Cobalt	1.8E+00	mg/kg	1.4E-10	mg/kg/day	NA	mg/kg/day	NA	9.8E-10	mg/kg/day	3.0E-04	mg/kg/day	3.3E-06
										Exp. Route Total	2.4E-08					1.9E-04
										Exposure Medium Total	5.1E-07					7.0E-03
	Air	Emissions from Surface Soil in Industrial Area	Inhalation	Chromium	9.3E-09	mg/m^3	1.6E-11	mg/m^3	8.4E-02	$(\mu g/m^3)^{-1}$	1.3E-09	1.1E-10	mg/kg/day	1.0E-04	mg/m3	1.1E-06
										Exp. Route Total	1.3E-09					1.1E-06
										Exposure Medium Total	1.3E-09					1.1E-06
										Surface Soil in Industrial Area Total	5.2E-07					7.0E-03

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Ingestion	Benzo(a)anthracene	1.9E-01	mg/kg	8.4E-09	mg/kg/day	7.3E-01	mg/kg/day	6.2E-09	5.9E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	1.0E-08	mg/kg/day	7.3E+00	mg/kg/day	7.5E-08	7.2E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-01	mg/kg/day	9.5E-09	9.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	1.3E-08	mg/kg/day	7.3E-02	mg/kg/day	9.2E-10	8.9E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	1.1E-08	mg/kg/day	7.3E-03	mg/kg/day	7.7E-11	7.4E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	3.1E-10	mg/kg/day	7.3E+00	mg/kg/day	2.3E-09	2.2E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	8.0E-09	mg/kg/day	7.3E-01	mg/kg/day	5.8E-09	5.6E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	5.6E-04	mg/kg/day	NA	mg/kg/day	NA	3.9E-03	mg/kg/day	1.0E+00		3.9E-03
				Arsenic	9.3E-01	mg/kg	4.2E-08	mg/kg/day	1.5E+00	mg/kg/day	6.3E-08	2.9E-07	mg/kg/day	3.0E-04		9.8E-04
				Chromium	1.2E+01	mg/kg	5.6E-07	mg/kg/day	5.0E-01	mg/kg/day	2.8E-07	3.9E-06	mg/kg/day	3.0E-03		1.3E-03
										Exp. Route Total	4.4E-07					6.2E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.9E-01	mg/kg	1.8E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.2E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.3E-01	mg/kg	2.2E-09	mg/kg/day	7.3E+00	mg/kg/day	1.6E-08	1.5E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	2.9E-01	mg/kg	2.8E-09	mg/kg/day	7.3E-01	mg/kg/day	2.1E-09	1.9E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.8E-01	mg/kg	2.8E-09	mg/kg/day	7.3E-02	mg/kg/day	2.0E-10	1.8E-08	mg/kg/day	NA		NA
				Chrysene	2.3E-01	mg/kg	2.3E-09	mg/kg/day	7.3E-03	mg/kg/day	1.7E-11	1.5E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	6.9E-03	mg/kg	6.8E-11	mg/kg/day	7.3E+00	mg/kg/day	5.0E-10	4.5E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	1.8E-01	mg/kg	1.7E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.2E-08	mg/kg/day	NA		NA
				Aluminum	1.2E+04	mg/kg	9.5E-07	mg/kg/day	NA	mg/kg/day	NA	6.3E-06	mg/kg/day	1.0E+00		6.3E-06
				Arsenic	9.3E-01	mg/kg	2.1E-09	mg/kg/day	1.5E+00	mg/kg/day	3.2E-09	1.4E-08	mg/kg/day	3.0E-04		4.7E-05
				Chromium	1.2E+01	mg/kg	9.3E-10	mg/kg/day	1.3E-02	mg/kg/day	1.2E-11	6.2E-09	mg/kg/day	7.5E-05		8.3E-05
										Exp. Route Total	2.5E-08					1.4E-04
										Exposure Medium Total	4.7E-07					6.4E-03
										Surface Soil in Flight Line Total	4.7E-07					6.4E-03

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	6.5E-06	mg/kg/day	NA	mg/kg/day	NA	4.5E-05	mg/kg/day	7.0E-01	mg/kg/day	6.5E-05
			Exp. Route Total								0.0E+00					6.5E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	2.6E-06	mg/kg/day	NA	mg/kg/day	NA	1.8E-06	mg/kg/day	7.0E-01	mg/kg/day	2.6E-06
			Exp. Route Total								0.0E+00					2.6E-06
		Exposure Point Total									0.0E+00					6.7E-05
	Exposure Medium Total										0.0E+00					6.7E-05
Surface Water in Pond Total											0.0E+00					6.7E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	6.8E-10	mg/kg/day	7.3E-01	mg/kg/day	5.0E-10	4.7E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	8.6E-10	mg/kg/day	7.3E+00	mg/kg/day	6.3E-09	6.0E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.7E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.2E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	1.4E-09	mg/kg/day	7.3E-02	mg/kg/day	1.0E-10	9.8E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.9E-09	mg/kg/day	7.3E-03	mg/kg/day	1.4E-11	1.3E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	3.4E-10	mg/kg/day	7.3E+00	mg/kg/day	2.5E-09	2.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	1.3E-09	mg/kg/day	7.3E-01	mg/kg/day	9.6E-10	9.2E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.2E-07	mg/kg/day	1.5E+00	mg/kg/day	1.8E-07	8.5E-07	mg/kg/day	3.0E-04	mg/kg/day	2.8E-03
				Chromium	1.4E+01	mg/kg	6.2E-07	mg/kg/day	5.0E-01	mg/kg/day	3.1E-07	4.4E-06	mg/kg/day	3.0E-03	mg/kg/day	1.5E-03
				Iron	7.2E+03	mg/kg	3.2E-04	mg/kg/day	NA		NA	2.3E-03	mg/kg/day	7.0E-01	mg/kg/day	3.2E-03
			Exp. Route Total								5.1E-07					7.5E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	7.1E-10	mg/kg/day	7.3E-01	mg/kg/day	5.2E-10	4.9E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	8.9E-10	mg/kg/day	7.3E+00	mg/kg/day	6.5E-09	6.3E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.8E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	1.5E-09	mg/kg/day	7.3E-02	mg/kg/day	1.1E-10	1.0E-08	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.9E-09	mg/kg/day	7.3E-03	mg/kg/day	1.4E-11	1.3E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	3.5E-10	mg/kg/day	7.3E+00	mg/kg/day	2.6E-09	2.5E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	1.4E-09	mg/kg/day	7.3E-01	mg/kg/day	1.0E-09	9.5E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	2.9E-08	mg/kg/day	1.5E+00	mg/kg/day	4.4E-08	2.1E-07	mg/kg/day	3.0E-04	mg/kg/day	6.8E-04
				Chromium	1.4E+01	mg/kg	5.0E-09	mg/kg/day	1.3E-02	mg/kg/day	6.2E-11	3.5E-08	mg/kg/day	7.5E-05	mg/kg/day	4.7E-04
				Iron	7.2E+03	mg/kg	2.6E-06	mg/kg/day	NA		NA	1.8E-05	mg/kg/day	7.0E-01	mg/kg/day	2.6E-05
			Exp. Route Total								5.6E-08					1.2E-03
		Exposure Point Total									5.6E-07					8.7E-03
Sediment in Pond Total											5.6E-07					8.7E-03

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Ingestion	Benzo(a)anthracene	2.6E+00	mg/kg	1.2E-07	mg/kg/day	7.3E-01	mg/kg/day	8.6E-08	8.2E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	1.6E-07	mg/kg/day	7.3E+00	mg/kg/day	1.2E-06	1.2E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	3.4E-07	mg/kg/day	7.3E-01	mg/kg/day	2.5E-07	2.4E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	1.0E-07	mg/kg/day	7.3E-02	mg/kg/day	7.6E-09	7.2E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	1.9E-07	mg/kg/day	7.3E-03	mg/kg/day	1.4E-09	1.3E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	4.0E-09	mg/kg/day	7.3E+00	mg/kg/day	2.9E-08	2.8E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	1.6E-07	mg/kg/day	7.3E-01	mg/kg/day	1.1E-07	1.1E-06	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	7.0E-04	mg/kg/day	NA	mg/kg/day	NA	4.9E-03	mg/kg/day	1.0E+00	mg/kg/day	4.9E-03
				Antimony	3.8E+00	mg/kg	1.7E-07	mg/kg/day	NA	mg/kg/day	NA	1.2E-06	mg/kg/day	4.0E-04	mg/kg/day	3.0E-03
				Arsenic	5.3E+00	mg/kg	2.4E-07	mg/kg/day	1.5E+00	mg/kg/day	3.6E-07	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	5.6E-03
				Cadmium	5.8E+00	mg/kg	2.6E-07	mg/kg/day	NA	mg/kg/day	NA	1.8E-06	mg/kg/day	5.0E-04	mg/kg/day	3.7E-03
				Chromium	3.0E+01	mg/kg	1.4E-06	mg/kg/day	5.0E-01	mg/kg/day	6.9E-07	9.6E-06	mg/kg/day	3.0E-03	mg/kg/day	3.2E-03
				Cobalt	6.0E+00	mg/kg	2.7E-07	mg/kg/day	NA	mg/kg/day	NA	1.9E-06	mg/kg/day	3.0E-04	mg/kg/day	6.3E-03
				Iron	1.8E+04	mg/kg	8.2E-04	mg/kg/day	NA	mg/kg/day	NA	5.8E-03	mg/kg/day	7.0E-01	mg/kg/day	8.2E-03
				Vanadium	3.7E+01	mg/kg	1.7E-06	mg/kg/day	NA	mg/kg/day	NA	1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.4E-03
										Exp. Route Total	2.7E-06					3.7E-02

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Dermal Absorption[2]	Benzo(a)anthracene	2.6E+00	mg/kg	1.2E-07	mg/kg/day	7.3E-01	mg/kg/day	8.9E-08	8.5E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	1.7E-07	mg/kg/day	7.3E+00	mg/kg/day	1.3E-06	1.2E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	3.5E-07	mg/kg/day	7.3E-01	mg/kg/day	2.6E-07	2.4E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	1.1E-07	mg/kg/day	7.3E-02	mg/kg/day	7.9E-09	7.5E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	2.0E-07	mg/kg/day	7.3E-03	mg/kg/day	1.4E-09	1.4E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	4.2E-09	mg/kg/day	7.3E+00	mg/kg/day	3.0E-08	2.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	1.6E-07	mg/kg/day	7.3E-01	mg/kg/day	1.2E-07	1.1E-06	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	5.6E-06	mg/kg/day	NA	mg/kg/day	NA	3.9E-05	mg/kg/day	1.0E+00		3.9E-05
				Antimony	3.8E+00	mg/kg	1.4E-09	mg/kg/day	NA	mg/kg/day	NA	9.5E-09	mg/kg/day	6.0E-05		1.6E-04
				Arsenic	5.3E+00	mg/kg	5.8E-08	mg/kg/day	1.5E+00	mg/kg/day	8.6E-08	4.0E-07	mg/kg/day	3.0E-04		1.3E-03
				Cadmium	5.8E+00	mg/kg	2.1E-09	mg/kg/day	NA	mg/kg/day	NA	1.5E-08	mg/kg/day	2.5E-05		5.9E-04
				Chromium	3.0E+01	mg/kg	1.1E-08	mg/kg/day	1.3E-02	mg/kg/day	1.4E-10	7.7E-08	mg/kg/day	7.5E-05		1.0E-03
				Cobalt	6.0E+00	mg/kg	2.2E-09	mg/kg/day	NA	mg/kg/day	NA	1.5E-08	mg/kg/day	3.0E-04		5.1E-05
				Iron	1.8E+04	mg/kg	6.6E-06	mg/kg/day	NA	mg/kg/day	NA	4.6E-05	mg/kg/day	7.0E-01		6.6E-05
				Vanadium	3.7E+01	mg/kg	1.4E-08	mg/kg/day	NA	mg/kg/day	NA	9.5E-08	mg/kg/day	1.3E-04		7.3E-04
			Exp. Route Total								1.8E-06					4.0E-03
		Exposure Point Total									4.6E-06					4.1E-02
	Exposure Medium Total										4.6E-06					4.1E-02
Sediment in Drainage Ditch Total											4.6E-06					4.1E-02

TABLE H 7.5.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Surface Water in Drainage Ditch	Ingestion	Benzo(a)anthracene	1.5E-01	µg/L	1.4E-09	mg/kg/day	7.3E-01	mg/kg/day	9.9E-10	9.5E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.4E-02	µg/L	3.1E-10	mg/kg/day	7.3E+00	mg/kg/day	2.2E-09	2.2E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	8.3E-02	µg/L	7.5E-10	mg/kg/day	7.3E-01	mg/kg/day	5.5E-10	5.3E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	6.8E-02	µg/L	6.2E-10	mg/kg/day	7.3E-01	mg/kg/day	4.5E-10	4.3E-09	mg/kg/day	NA		NA
				Naphthalene	1.1E-01	µg/L	9.9E-10	mg/kg/day	NA	mg/kg/day	NA	6.9E-09	mg/kg/day	2.0E-02		3.5E-07
				Aluminum	2.0E+03	µg/L	1.8E-05	mg/kg/day	NA		NA	1.2E-04	mg/kg/day	1.0E+00	mg/kg/day	1.2E-04
				Iron	3.3E+04	µg/L	3.0E-04	mg/kg/day	NA		NA	2.1E-03	mg/kg/day	7.0E-01	mg/kg/day	3.0E-03
				Manganese	3.7E+02	µg/L	3.4E-06	mg/kg/day	NA		NA	2.4E-05	mg/kg/day	2.4E-02	mg/kg/day	9.9E-04
				Vanadium	2.2E+01	µg/L	2.0E-07	mg/kg/day	NA		NA	1.4E-06	mg/kg/day	5.0E-03	mg/kg/day	2.8E-04
				Exp. Route Total							4.2E-09					4.4E-03
			Dermal Absorption[3]	Benzo(a)anthracene	1.5E-01	µg/L	7.1E-07	mg/kg/day	7.3E-01	mg/kg/day	5.2E-07	5.0E-06	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.4E-02	µg/L	2.8E-07	mg/kg/day	7.3E+00	mg/kg/day	2.0E-06	1.9E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	8.3E-02	µg/L	6.8E-07	mg/kg/day	7.3E-01	mg/kg/day	5.0E-07	4.8E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	6.8E-02	µg/L	5.6E-07	mg/kg/day	7.3E-01	mg/kg/day	4.1E-07	3.9E-06	mg/kg/day	NA		NA
				Naphthalene	1.1E-01	µg/L	2.8E-08	mg/kg/day	NA	mg/kg/day	NA	1.9E-07	mg/kg/day	2.0E-02		9.6E-06
				Aluminum	2.0E+03	µg/L	7.1E-06	mg/kg/day	NA	mg/kg/day	NA	5.0E-05	mg/kg/day	1.0E+00	mg/kg/day	5.0E-05
				Iron	3.3E+04	µg/L	1.2E-04	mg/kg/day	NA		NA	8.4E-04	mg/kg/day	7.0E-01	mg/kg/day	1.2E-03
				Manganese	3.7E+02	µg/L	1.4E-06	mg/kg/day	NA		NA	9.5E-06	mg/kg/day	9.6E-04	mg/kg/day	9.9E-03
				Vanadium	2.2E+01	µg/L	8.0E-08	mg/kg/day	NA		NA	5.6E-07	mg/kg/day	1.3E-04	mg/kg/day	4.3E-03
				Exp. Route Total							3.4E-06					1.5E-02
		Exposure Point Total									3.4E-06					2.0E-02
	Exposure Medium Total										3.4E-06					2.0E-02
Surface Water in Drainage Ditch Total											3.4E-06					2.0E-02
Total of Receptor Risks Across All Media											9.6E-06	Total of Receptor Hazards Across All Media				8.3E-02

Notes:

1. Dermal absorption from surface water in pond calculated on Table H 7.1.RME Supplement A.
2. Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.03 used for arsenic, and DABS of 0.001 used for other metals.

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	3.2E-07	mg/kg/day	NA	mg/kg/day	NA	2.2E-05	mg/kg/day	7.0E-01	mg/kg/day	3.2E-05
										Exp. Route Total	0.0E+00					3.2E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	4.2E-06	mg/kg/day	NA	mg/kg/day	NA	2.9E-04	mg/kg/day	7.0E-01	mg/kg/day	4.2E-04
										Exp. Route Total	0.0E+00					4.2E-04
										Exposure Point Total	0.0E+00					4.5E-04
										Exposure Medium Total	0.0E+00					4.5E-04
										Surface Water in Pond Total	0.0E+00					4.5E-04
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	1.7E-11	mg/kg/day	7.3E-01	mg/kg/day	1.2E-11	1.2E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	2.1E-11	mg/kg/day	7.3E+00	mg/kg/day	1.6E-10	1.5E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	4.2E-11	mg/kg/day	7.3E-01	mg/kg/day	3.1E-11	3.0E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	3.5E-11	mg/kg/day	7.3E-02	mg/kg/day	2.5E-12	2.4E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	4.6E-11	mg/kg/day	7.3E-03	mg/kg/day	3.3E-13	3.2E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	8.4E-12	mg/kg/day	7.3E+00	mg/kg/day	6.1E-11	5.9E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	3.2E-11	mg/kg/day	7.3E-01	mg/kg/day	2.4E-11	2.3E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	3.0E-09	mg/kg/day	1.5E+00	mg/kg/day	4.5E-09	2.1E-07	mg/kg/day	3.0E-04	mg/kg/day	7.0E-04
				Chromium	1.4E+01	mg/kg	1.5E-08	mg/kg/day	5.0E-01	mg/kg/day	7.7E-09	1.1E-06	mg/kg/day	2.0E-02	mg/kg/day	5.4E-05
				Iron	7.2E+03	mg/kg	8.0E-06	mg/kg/day	NA		NA	5.6E-04	mg/kg/day	7.0E-01	mg/kg/day	8.0E-04
										Exp. Route Total	1.3E-08					1.6E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	4.3E-11	mg/kg/day	7.3E-01	mg/kg/day	3.2E-11	3.0E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.5E-11	mg/kg/day	7.3E+00	mg/kg/day	4.0E-10	3.8E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.1E-10	mg/kg/day	7.3E-01	mg/kg/day	8.0E-11	7.7E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	8.9E-11	mg/kg/day	7.3E-02	mg/kg/day	6.5E-12	6.2E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.2E-10	mg/kg/day	7.3E-03	mg/kg/day	8.6E-13	8.3E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.2E-11	mg/kg/day	7.3E+00	mg/kg/day	1.6E-10	1.5E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	8.3E-11	mg/kg/day	7.3E-01	mg/kg/day	6.1E-11	5.8E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.8E-09	mg/kg/day	1.5E+00	mg/kg/day	2.7E-09	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.2E-04
				Chromium	1.4E+01	mg/kg	3.1E-10	mg/kg/day	1.3E-02	mg/kg/day	3.8E-12	2.1E-08	mg/kg/day	5.0E-04	mg/kg/day	4.3E-05
				Iron	7.2E+03	mg/kg	1.6E-07	mg/kg/day	NA		NA	1.1E-05	mg/kg/day	7.0E-01	mg/kg/day	1.6E-05
										Exp. Route Total	3.4E-09					4.8E-04
										Exposure Point Total	1.6E-08					2.0E-03
										Sediment in Pond Total	1.6E-08					2.0E-03

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Drainage Ditch	Ingestion	Benzo(a)anthracene	2.6E+00	mg/kg	2.9E-09	mg/kg/day	7.3E-01	mg/kg/day	2.1E-09	2.0E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	4.1E-09	mg/kg/day	7.3E+00	mg/kg/day	3.0E-08	2.9E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	8.3E-09	mg/kg/day	7.3E-01	mg/kg/day	6.1E-09	5.8E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	2.6E-09	mg/kg/day	7.3E-02	mg/kg/day	1.9E-10	1.8E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	4.7E-09	mg/kg/day	7.3E-03	mg/kg/day	3.4E-11	3.3E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	9.9E-11	mg/kg/day	7.3E+00	mg/kg/day	7.2E-10	6.9E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	3.9E-09	mg/kg/day	7.3E-01	mg/kg/day	2.8E-09	2.7E-07	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	1.7E-05	mg/kg/day	NA	mg/kg/day	NA	1.2E-03	mg/kg/day	1.0E+00	mg/kg/day	1.2E-03
				Antimony	3.8E+00	mg/kg	4.2E-09	mg/kg/day	NA	mg/kg/day	NA	2.9E-07	mg/kg/day	4.0E-04	mg/kg/day	7.4E-04
				Arsenic	5.3E+00	mg/kg	5.9E-09	mg/kg/day	1.5E+00	mg/kg/day	8.9E-09	4.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.4E-03
				Cadmium	5.8E+00	mg/kg	6.5E-09	mg/kg/day	NA	mg/kg/day	NA	4.6E-07	mg/kg/day	5.0E-04	mg/kg/day	9.1E-04
				Chromium	3.0E+01	mg/kg	3.4E-08	mg/kg/day	5.0E-01	mg/kg/day	1.7E-08	2.4E-06	mg/kg/day	2.0E-02	mg/kg/day	1.2E-04
				Cobalt	6.0E+00	mg/kg	6.7E-09	mg/kg/day	NA	mg/kg/day	NA	4.7E-07	mg/kg/day	3.0E-03	mg/kg/day	1.6E-04
				Iron	1.8E+04	mg/kg	2.0E-05	mg/kg/day	NA	mg/kg/day	NA	1.4E-03	mg/kg/day	7.0E-01	mg/kg/day	2.0E-03
				Vanadium	3.7E+01	mg/kg	4.2E-08	mg/kg/day	NA	mg/kg/day	NA	2.9E-06	mg/kg/day	7.0E-03	mg/kg/day	4.2E-04
										Exp. Route Total	6.8E-08					7.0E-03
			Dermal Absorption[2]	Benzo(a)anthracene	2.6E+00	mg/kg	7.5E-09	mg/kg/day	7.3E-01	mg/kg/day	5.5E-09	9.2E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	3.6E+00	mg/kg	1.0E-08	mg/kg/day	7.3E+00	mg/kg/day	7.7E-08	1.3E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.4E+00	mg/kg	2.1E-08	mg/kg/day	7.3E-01	mg/kg/day	1.6E-08	2.6E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E+00	mg/kg	6.6E-09	mg/kg/day	7.3E-02	mg/kg/day	4.8E-10	8.1E-07	mg/kg/day	NA		NA
				Chrysene	4.2E+00	mg/kg	1.2E-08	mg/kg/day	7.3E-03	mg/kg/day	8.8E-11	1.5E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	8.9E-02	mg/kg	2.6E-10	mg/kg/day	7.3E+00	mg/kg/day	1.9E-09	3.1E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.5E+00	mg/kg	1.0E-08	mg/kg/day	7.3E-01	mg/kg/day	7.3E-09	1.2E-06	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	3.4E-07	mg/kg/day	NA	mg/kg/day	NA	4.2E-05	mg/kg/day	1.0E+00		4.2E-05
				Antimony	3.8E+00	mg/kg	8.3E-11	mg/kg/day	NA	mg/kg/day	NA	1.0E-08	mg/kg/day	6.0E-05		1.7E-04
				Arsenic	5.3E+00	mg/kg	3.5E-09	mg/kg/day	1.5E+00	mg/kg/day	5.3E-09	4.3E-07	mg/kg/day	3.0E-04		1.4E-03
				Cadmium	5.8E+00	mg/kg	1.3E-10	mg/kg/day	NA	mg/kg/day	NA	1.6E-08	mg/kg/day	2.5E-05		6.3E-04
				Chromium	3.0E+01	mg/kg	6.7E-10	mg/kg/day	1.3E-02	mg/kg/day	8.4E-12	8.3E-08	mg/kg/day	5.0E-04		1.7E-04
				Cobalt	6.0E+00	mg/kg	1.3E-10	mg/kg/day	NA	mg/kg/day	NA	1.6E-08	mg/kg/day	3.0E-03		5.4E-06
				Iron	1.8E+04	mg/kg	4.0E-07	mg/kg/day	NA	mg/kg/day	NA	5.0E-05	mg/kg/day	7.0E-01		7.1E-05
				Vanadium	3.7E+01	mg/kg	8.3E-10	mg/kg/day	NA	mg/kg/day	NA	1.0E-07	mg/kg/day	1.8E-04		5.6E-04
										Exp. Route Total	1.1E-07					3.1E-03
										Exposure Point Total	1.8E-07					1.0E-02
										Exposure Medium Total	1.8E-07					1.0E-02
										Sediment in Drainage Ditch Total	1.8E-07					1.0E-02

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	6.4E-09	mg/kg/day	7.3E-01	mg/kg/day	4.7E-09	4.5E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	4.9E-09	mg/kg/day	7.3E+00	mg/kg/day	3.6E-08	3.4E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	6.7E-09	mg/kg/day	7.3E-01	mg/kg/day	4.9E-09	4.7E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	4.8E-09	mg/kg/day	7.3E-02	mg/kg/day	3.5E-10	3.4E-07	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	7.1E-09	mg/kg/day	7.3E-03	mg/kg/day	5.2E-11	5.0E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	3.8E-09	mg/kg/day	7.3E-01	mg/kg/day	2.8E-09	2.7E-07	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	7.0E-04	mg/kg/day	NA		NA	4.9E-02	mg/kg/day	1.0E+00	mg/kg/day	4.9E-02
				Arsenic	1.5E+00	mg/kg	9.9E-08	mg/kg/day	1.5E+00	mg/kg/day	1.5E-07	6.9E-06	mg/kg/day	3.0E-04	mg/kg/day	2.3E-02
				Chromium	1.5E+01	mg/kg	1.0E-06	mg/kg/day	5.0E-01	mg/kg/day	5.0E-07	7.0E-05	mg/kg/day	5.0E-04	mg/kg/day	1.4E-01
				Cobalt	1.5E+00	mg/kg	1.0E-07	mg/kg/day	NA		NA	7.1E-06	mg/kg/day	3.0E-03	mg/kg/day	2.4E-03
				Iron	4.0E+03	mg/kg	2.7E-04	mg/kg/day	NA		NA	1.9E-02	mg/kg/day	7.0E-01	mg/kg/day	2.7E-02
										Exp. Route Total	7.0E-07					2.4E-01
			Dermal Absorption[2]	Benzo(a)anthracene	9.5E-02	mg/kg	1.1E-09	mg/kg/day	7.3E-01	mg/kg/day	8.3E-10	8.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	8.7E-10	mg/kg/day	7.3E+00	mg/kg/day	6.4E-09	6.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	1.2E-09	mg/kg/day	7.3E-01	mg/kg/day	8.7E-10	8.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	8.6E-10	mg/kg/day	7.3E-02	mg/kg/day	6.3E-11	6.0E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	1.3E-09	mg/kg/day	7.3E-03	mg/kg/day	9.3E-12	8.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	6.8E-10	mg/kg/day	7.3E-01	mg/kg/day	4.9E-10	4.7E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	9.6E-07	mg/kg/day	NA	mg/kg/day	NA	6.7E-05	mg/kg/day	1.0E+00	mg/kg/day	6.7E-05
				Arsenic	1.5E+00	mg/kg	4.1E-09	mg/kg/day	1.5E+00	mg/kg/day	6.1E-09	2.9E-07	mg/kg/day	3.0E-04	mg/kg/day	9.5E-04
				Chromium	1.5E+01	mg/kg	1.4E-09	mg/kg/day	1.3E-02	mg/kg/day	1.7E-11	9.6E-08	mg/kg/day	5.0E-04	mg/kg/day	1.9E-04
				Cobalt	1.5E+00	mg/kg	1.4E-10	mg/kg/day	NA	mg/kg/day	NA	9.8E-09	mg/kg/day	3.0E-03	mg/kg/day	3.3E-06
				Iron	4.0E+03	mg/kg	3.7E-07	mg/kg/day	NA	mg/kg/day	NA	2.6E-05	mg/kg/day	7.0E-01	mg/kg/day	3.7E-05
										Exp. Route Total	1.5E-08					1.3E-03
										Exposure Point Total	7.1E-07					2.4E-01
										Exposure Medium Total	7.1E-07					2.4E-01
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	3.6E-11	mg/m^3	8.4E-02	mg/m^3	3.0E-09	2.5E-09	mg/m^3	1.0E-04	mg/m^3	2.5E-05
										Exp. Route Total	3.0E-09					2.5E-05
										Exposure Medium Total	3.0E-09					2.5E-05
										Soil* in Industrial Area Total	7.1E-07					2.4E-01

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	3.2E-09	mg/kg/day	7.3E-01	mg/kg/day	2.4E-09	2.3E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	4.1E-09	mg/kg/day	7.3E+00	mg/kg/day	3.0E-08	2.9E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	5.0E-09	mg/kg/day	7.3E-01	mg/kg/day	3.7E-09	3.5E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	3.6E-09	mg/kg/day	7.3E-02	mg/kg/day	2.6E-10	2.5E-07	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	3.9E-09	mg/kg/day	7.3E-03	mg/kg/day	2.8E-11	2.7E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	2.1E-10	mg/kg/day	7.3E+00	mg/kg/day	1.5E-09	1.4E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	3.0E-09	mg/kg/day	7.3E-01	mg/kg/day	2.2E-09	2.1E-07	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	1.4E-03	mg/kg/day	NA		NA	9.7E-02	mg/kg/day	1.0E+00	mg/kg/day	9.7E-02
				Arsenic	1.1E+01	mg/kg	7.5E-07	mg/kg/day	1.5E+00	mg/kg/day	1.1E-06	5.2E-05	mg/kg/day	3.0E-04	mg/kg/day	1.7E-01
				Chromium	3.4E+01	mg/kg	2.3E-06	mg/kg/day	5.0E-01	mg/kg/day	1.2E-06	1.6E-04	mg/kg/day	5.0E-04	mg/kg/day	3.2E-01
				Cobalt	1.5E+00	mg/kg	1.0E-07	mg/kg/day	NA		NA	7.1E-06	mg/kg/day	3.0E-03	mg/kg/day	2.4E-03
				Iron	1.4E+04	mg/kg	9.3E-04	mg/kg/day	NA		NA	6.5E-02	mg/kg/day	7.0E-01	mg/kg/day	9.3E-02
				Vanadium	5.9E+01	mg/kg	4.0E-06	mg/kg/day	NA		NA	2.8E-04	mg/kg/day	7.0E-03	mg/kg/day	4.0E-02
										Exp. Route Total	2.3E-06					7.3E-01
			Dermal Absorption[2]	Benzo(a)anthracene	4.8E-02	mg/kg	5.8E-10	mg/kg/day	7.3E-01	mg/kg/day	4.2E-10	4.1E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	7.3E-10	mg/kg/day	7.3E+00	mg/kg/day	5.3E-09	5.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	9.0E-10	mg/kg/day	7.3E-01	mg/kg/day	6.6E-10	6.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	6.5E-10	mg/kg/day	7.3E-02	mg/kg/day	4.7E-11	4.5E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	6.9E-10	mg/kg/day	7.3E-03	mg/kg/day	5.0E-12	4.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	3.7E-11	mg/kg/day	7.3E+00	mg/kg/day	2.7E-10	2.6E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	5.3E-10	mg/kg/day	7.3E-01	mg/kg/day	3.9E-10	3.7E-08	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	1.9E-06	mg/kg/day	NA		NA	1.3E-04	mg/kg/day	1.0E+00	mg/kg/day	1.3E-04
				Arsenic	1.1E+01	mg/kg	3.1E-08	mg/kg/day	1.5E+00	mg/kg/day	4.6E-08	2.2E-06	mg/kg/day	3.0E-04	mg/kg/day	7.2E-03
				Chromium	3.4E+01	mg/kg	3.2E-09	mg/kg/day	1.3E-02	mg/kg/day	4.0E-11	2.2E-07	mg/kg/day	5.0E-04	mg/kg/day	4.4E-04
				Cobalt	1.5E+00	mg/kg	1.4E-10	mg/kg/day	NA		NA	9.7E-09	mg/kg/day	3.0E-03	mg/kg/day	3.2E-06
				Iron	1.4E+04	mg/kg	1.3E-06	mg/kg/day	NA		NA	8.9E-05	mg/kg/day	7.0E-01	mg/kg/day	1.3E-04
				Vanadium	5.9E+01	mg/kg	5.5E-09	mg/kg/day	NA		NA	3.8E-07	mg/kg/day	1.8E-04	mg/kg/day	2.1E-03
										Exp. Route Total	5.3E-08					1.0E-02
										Exposure Point Total	2.4E-06					7.4E-01
										Exposure Medium Total	2.4E-06					7.4E-01

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	8.2E-11	mg/m^3	2.3E-05	mg/m^3	1.9E-12	5.8E-09	mg/m^3	1.0E-04	mg/m^3	5.8E-05
			Exp. Route Total								1.9E-12					5.8E-05
	Exposure Medium Total										1.9E-12					5.8E-05
Soil* in Flight Line Area Total											2.4E-06					7.4E-01
Groundwater	Groundwater Group 1	Surficial Aquifer Water in Excavation Pit	Dermal Absorption[1]	1,1-Dichloroethane	7.9E-01	µg/L	2.4E-09	mg/kg/day	7.3E-01	mg/kg/day	1.7E-09	1.7E-07	mg/kg-day	2.0E-01	mg/kg/day	8.4E-07
				2-Hexanone	1.4E+01	µg/L	2.2E-08	mg/kg/day	7.3E+00	mg/kg/day	1.6E-07	1.6E-06	mg/kg-day	5.0E-03	mg/kg/day	3.1E-04
				Benzene	2.3E+00	µg/L	1.4E-08	mg/kg/day	7.3E-01	mg/kg/day	1.0E-08	1.0E-06	mg/kg-day	4.0E-03	mg/kg/day	2.5E-04
				Chloroform	6.9E-01	µg/L	2.2E-09	mg/kg/day	7.3E-02	mg/kg/day	1.6E-10	1.6E-07	mg/kg-day	1.0E-02	mg/kg/day	1.6E-05
				cis-1,2-Dichloroethene	3.6E+01	µg/L	3.0E-05	mg/kg/day	7.3E-03	mg/kg/day	2.2E-07	2.1E-03	mg/kg-day	1.0E-01	mg/kg/day	2.1E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	2.7E-08	mg/kg/day	7.3E+00	mg/kg/day	2.0E-07	1.9E-06	mg/kg-day	9.0E-01	mg/kg/day	2.1E-06
				Ethylbenzene	9.2E-01	µg/L	1.9E-08	mg/kg/day	7.3E-01	mg/kg/day	1.4E-08	1.3E-06	mg/kg-day	1.0E-01	mg/kg/day	1.3E-05
				Tetrachloroethene	1.9E+02	µg/L	3.4E-06	mg/kg/day	NA	mg/kg/day	NA	2.4E-04	mg/kg-day	1.0E-01	mg/kg/day	2.4E-03
				Trichloroethene	4.5E+01	µg/L	2.5E-07	mg/kg/day	1.5E+00	mg/kg/day	3.8E-07	1.8E-05	mg/kg-day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	2.4E-08	mg/kg/day	1.3E-02	mg/kg/day	2.9E-10	1.6E-06	mg/kg-day	3.0E-03	mg/kg/day	5.5E-04
				Naphthalene	1.9E-01	µg/L	3.9E-09	mg/kg/day	NA	mg/kg/day	NA	2.8E-07	mg/kg-day	2.0E-02	mg/kg/day	1.4E-05
				Antimony	3.4E+00	µg/L	1.3E-09	mg/kg/day	NA	mg/kg/day	NA	9.1E-08	mg/kg-day	6.0E-05	mg/kg/day	1.5E-03
				Iron	5.3E+03	µg/L	2.0E-06	mg/kg/day	NA	mg/kg/day	NA	1.4E-04	mg/kg-day	7.0E-01	mg/kg/day	2.0E-04
			Exp. Route Total								9.8E-07					2.6E-02
		Exposure Point Total									9.8E-07					2.6E-02
Exposure Medium Total											9.8E-07					2.6E-02

TABLE H 7.6.RME

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Air Group 1	Water Vapors in Excavation Pit	Inhalation	1,1-Dichloroethane	7.9E-01	µg/L	4.5E-06	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	1.0E-10	3.2E-07	mg/m^3	NA		NA
				2-Hexanone	1.4E+01	µg/L	5.6E-05	µg/m^3	8.4E-02	(µg/m^3)$^{-1}$	4.7E-06	3.9E-06	mg/m^3	3.0E-02	mg/m^3	1.3E-04
				Benzene	2.3E+00	µg/L	1.4E-05	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.5E-10	9.6E-07	mg/m^3	3.0E-02	mg/m^3	3.2E-05
				Chloroform	6.9E-01	µg/L	3.7E-06	µg/m^3	NA		NA	2.6E-07	mg/m^3	2.8E-02	mg/m^3	9.4E-06
				cis-1,2-Dichloroethene	3.6E+01	µg/L	2.1E-04	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.9E-06	1.4E-05	mg/m^3	NA		NA
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	3.5E-05	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	4.2E-08	2.5E-06	mg/m^3	2.0E+00	mg/m^3	1.2E-06
				Ethylbenzene	9.2E-01	µg/L	5.2E-06	µg/m^3	NA		NA	3.6E-07	mg/m^3	1.0E+00	mg/m^3	3.6E-07
				Tetrachloroethene	1.9E+02	µg/L	9.6E-04	µg/m^3	2.5E-06	(µg/m^3)$^{-1}$	2.4E-09	6.7E-05	mg/m^3	2.7E-01	mg/m^3	2.5E-04
				Trichloroethene	4.5E+01	µg/L	2.4E-04	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.7E-08	1.7E-05	mg/m^3	NA		NA
				Vinyl chloride	1.0E+01	µg/L	6.4E-05	µg/m^3	NA		NA	4.5E-06	mg/m^3	1.0E-01	mg/m^3	4.5E-05
				Naphthalene	1.9E-01	µg/L	9.4E-07	µg/m^3	NA		NA	6.6E-08	mg/m^3	3.0E-03	mg/m^3	2.2E-05
				Exp. Route Total							6.6E-06					4.9E-04
		Exposure Point Total									6.6E-06					4.9E-04
	Exposure Medium Total										6.6E-06					4.9E-04
Groundwater Total											7.6E-06					2.7E-02
Total of Receptor Risks Across All Media											1.1E-05	Total of Receptor Hazards Across All Media				1.0E+00

Notes:

* Soil = combined surface and subsurface soil

1. Dermal absorption from surface water in pond and groundwater calculated on Table H 7.6.RME Supplement A.
2. Dermal absorption factors (DABs) used to calculated dermal absorption intake are chemical specific. DABS of 0.13 used for the PAHs, DABS of 0.03 used for arsenic, and DABS of 0.001 used for other metals.
3. Air concentration above excavation calculated on Table H 7.6.RME Supplement C

TABLE H 7.6.RME SUPPLEMENT A

Calculation of DAevent - Adult Construction Worker, Surface Water in Pond and Surficial Groundwater

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
1,1-Dichloroethane	7.9E-01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	4	2.5E-08	3
2-Hexanone[1]	1.4E+01	3.6E-03	1.4E-02	3.8E-01	9.2E-01	1.0E+00	4	2.3E-07	3
Benzene	2.3E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4	1.5E-07	3
Chloroform	6.9E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	4	2.3E-08	3
cis-1,2-Dichloroethene[1]	3.6E+01	1.9E+00	2.9E-02	3.7E-01	8.8E-01	1.0E+00	4	3.1E-04	3
Dichlorodifluoromethane (Freon-12)	6.5E+00	9.0E-03	3.8E-02	5.1E-01	1.2E+00	1.0E+00	4	2.8E-07	3
Ethylbenzene	9.2E-01	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	4	2.0E-07	3
Tetrachloroethene	1.9E+02	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	4	3.5E-05	3
Trichloroethene	4.5E+01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	4	2.6E-06	3
Vinyl chloride	1.0E+01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	4	2.5E-07	3
Naphthalene	1.9E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4	4.1E-08	3
Antimony	3.4E+00	1.0E-03	NA	NA	NA	NA	4	1.4E-08	1
Iron	5.3E+03	1.0E-03	NA	NA	NA	NA	4	2.1E-05	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.6.RME SUPPLEMENT B

Calculation of DAevent

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	MW	log Kow	Kow	log Kp[1]	Kp (cm/hr)	B[1]	log D_{sc}/l_{sc}[1]	D_{sc}/l_{sc}[1]	l_{sc} (cm)	D_{sc} (cm^2/hr)	τ_{event}[1] (hr)	c[1]	b[1]	t*[1] (hr)
2-Hexanone	1.00E+02	1.38E+00	2.40E+01	-2.45E+00	3.55E-03	1.37E-02	-3.36E+00	4.37E-04	1.00E-03	4.37E-07	3.82E-01	3.43E-01	3.12E-01	9.16E-01
cis-1,2-Dichloroethene	9.69E+01	1.86E+00	7.24E+01	-2.12E+00	7.67E-03	2.91E-02	-3.34E+00	4.54E-04	1.00E-03	4.54E-07	3.67E-01	3.53E-01	3.21E-01	8.80E-01

Notes:

[1] Equations from Risk Assessment Guidance for Superfund Volume 1; Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005. July 2004.

MW and log Kow from Texas Commission on Environmental Quality (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).

TABLE H 7.6.RME SUPPLEMENT C

Inhalation of Volatiles from Surficial Groundwater During Construction—Inhalation Exposure Concentrations Calcultated Using a Two-Film Volatilization Model

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	Cw (µg/L)	MW (mol/gram)	KH (unitless)	kl (cm/hr)	kg (cm/hr)	Kv (cm/hr)	ER (mg/hr)	ERa (g/sec-m^2)	Ca (µg/m^3)	Ca (mg/m^3)
1,1-Dichloroethane	7.9E-01	9.9E+01	2.3E-01	3.3E+00	2.0E+03	3.3E+00	2.6E+00	9.7E-11	2.8E-03	2.8E-06
2-Hexanone	1.4E+01	1.0E+02	3.8E-03	3.3E+00	2.0E+03	2.3E+00	3.2E+01	1.2E-09	3.4E-02	3.4E-05
Benzene	2.3E+00	7.8E+01	2.3E-01	3.5E+00	2.1E+03	3.5E+00	7.9E+00	3.0E-10	8.4E-03	8.4E-06
Chloroform	6.9E-01	1.2E+02	1.5E-01	3.2E+00	1.9E+03	3.1E+00	2.2E+00	8.1E-11	2.3E-03	2.3E-06
cis-1,2-Dichloroethene	3.6E+01	9.7E+01	1.7E-01	3.3E+00	2.0E+03	3.3E+00	1.2E+02	4.4E-09	1.3E-01	1.3E-04
Dichlorodifluoromethane (Freon-12)	6.5E+00	1.2E+02	1.4E+01	3.2E+00	1.9E+03	3.2E+00	2.0E+01	7.6E-10	2.2E-02	2.2E-05
Ethylbenzene	9.2E-01	1.1E+02	3.2E-01	3.3E+00	2.0E+03	3.2E+00	3.0E+00	1.1E-10	3.2E-03	3.2E-06
Tetrachloroethene	1.9E+02	1.7E+02	7.2E-01	2.9E+00	1.8E+03	2.9E+00	5.5E+02	2.1E-08	5.9E-01	5.9E-04
Trichloroethene	4.5E+01	1.3E+02	4.0E-01	3.1E+00	1.9E+03	3.1E+00	1.4E+02	5.2E-09	1.5E-01	1.5E-04
Vinyl chloride	1.0E+01	6.3E+01	1.1E+00	3.7E+00	2.3E+03	3.7E+00	3.7E+01	1.4E-09	3.9E-02	3.9E-05
Naphthalene	1.9E-01	1.3E+02	1.8E-02	3.1E+00	1.9E+03	2.8E+00	5.4E-01	2.0E-11	5.7E-04	5.7E-07

Notes:

Equations

Equation 1	$Kv = 1/(1/k_l + 1/K_H{*}K_g)$
Equation 2	$k_g = 700(18/MW)^{1/4}V$
Equation 3	$k_l = (32/MW)^{1/4}Ka'$
Equation 4	ER = Kv * Cw * L/1000 cm^3 * mg/1000 µg
Equation 5	ERa = ER * g/1000 mg * hr/60 min * min/60 sec * 1/A

Variables	Units	Exposure Assumptions
Cw = groundwater concentration	(µg/L)	chem-specific
MW = molecular weight	(mol/gram)	chem-specific
K_H - Henry's Law Constant	(unitless)	chem-specific
Kv = volatilization rate	(cm/hr)	Solved by Eq 1
k_g = gas phase transfer coefficient	(cm/hr)	Solved by Eq 2
k_l = liquid phase transfer coefficient	(cm/hr)	Solved by Eq 3
V = wind speed	(m/s)	4.4
Ka' = aeration rate	(cm/hr)	0.0633
ER = emission rate	(mg/hr)	Solved by Eq 4
A = area of excavation	(m^2)	7,432
Era = area emission rate	(g/sec-m^2)	Solved by Eq 5
Ca = air concentration	(mg/m^3)	Solved using SCREEN3 model

Note: aeration rate based on aeration rate for small pond (0.1/day) multiplied by depth of water in excavation (1/2 ft)

TABLE H 7.1.CTE

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	5.3E-02	mg/kg	NA		NA		NA	2.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	NA		NA		NA	1.9E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	NA		NA		NA	2.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	1.8E-08	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	NA		NA		NA	2.7E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	NA		NA		NA	1.5E-08	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	NA		NA		NA	3.5E-03	mg/kg/day	1.0E+00	mg/kg/day	3.5E-03
				Arsenic	1.2E+00	mg/kg	NA		NA		NA	5.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
				Chromium	1.2E+01	mg/kg	NA		NA		NA	5.3E-06	mg/kg/day	3.0E-03	mg/kg/day	1.8E-03
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	5.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
				Iron	3.2E+03	mg/kg	NA		NA		NA	1.5E-03	mg/kg/day	7.0E-01	mg/kg/day	2.1E-03
										Exp. Route Total	0.0E+00					1.1E-02
			Dermal Absorption[1]	Benzo(a)anthracene	5.3E-02	mg/kg	NA		NA		NA	3.6E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	NA		NA		NA	2.8E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	NA		NA		NA	4.1E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	2.6E-09	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	NA		NA		NA	4.0E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	NA		NA		NA	2.2E-09	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	NA		NA		NA	4.0E-06	mg/kg/day	1.0E+00	mg/kg/day	4.0E-06
				Arsenic	1.2E+00	mg/kg	NA		NA		NA	1.9E-08	mg/kg/day	3.0E-04	mg/kg/day	6.4E-05
				Chromium	1.2E+01	mg/kg	NA		NA		NA	6.1E-09	mg/kg/day	7.5E-05	mg/kg/day	8.1E-05
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	6.5E-10	mg/kg/day	3.0E-04	mg/kg/day	2.2E-06
				Iron	3.2E+03	mg/kg	NA		NA		NA	1.7E-06	mg/kg/day	7.0E-01	mg/kg/day	2.4E-06
										Exp. Route Total	0.0E+00					1.5E-04
										Exposure Medium Total	0.0E+00					1.1E-02
										Soil* in Industrial Area Total	0.0E+00					1.1E-02

TABLE H 7.1.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	NA		NA		NA	2.2E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	NA		NA		NA	2.8E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	NA		NA		NA	3.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	NA		NA		NA	2.5E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	NA		NA		NA	2.6E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	NA		NA		NA	1.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	NA		NA		NA	2.0E-08	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	NA		NA		NA	9.5E-03	mg/kg/day	1.0E+00	mg/kg/day	9.5E-03
				Arsenic	1.1E+01	mg/kg	NA		NA		NA	5.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.7E-02
				Chromium	3.4E+01	mg/kg	NA		NA		NA	1.6E-05	mg/kg/day	3.0E-03	mg/kg/day	5.2E-03
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	6.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.3E-03
				Iron	1.4E+04	mg/kg	NA		NA		NA	6.3E-03	mg/kg/day	7.0E-01	mg/kg/day	9.1E-03
				Vanadium	5.9E+01	mg/kg	NA		NA		NA	2.7E-05	mg/kg/day	5.0E-03	mg/kg/day	5.4E-03
			Exp. Route Total								0.0E+00					4.9E-02
			Dermal Absorption[1]	Benzo(a)anthracene	2.3E-02	mg/kg	NA		NA		NA	1.5E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.9E-02	mg/kg	NA		NA		NA	1.9E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	2.7E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E-02	mg/kg	NA		NA		NA	1.6E-09	mg/kg/day	NA		NA
				Chrysene	2.9E-02	mg/kg	NA		NA		NA	2.0E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	NA		NA		NA	1.6E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	NA		NA		NA	1.5E-09	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	NA		NA		NA	7.9E-06	mg/kg/day	1.0E+00	mg/kg/day	7.9E-06
				Arsenic	2.9E+00	mg/kg	NA		NA		NA	4.5E-08	mg/kg/day	3.0E-04	mg/kg/day	1.5E-04
				Chromium	1.8E+01	mg/kg	NA		NA		NA	9.3E-09	mg/kg/day	7.5E-05	mg/kg/day	1.2E-04
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	6.5E-10	mg/kg/day	3.0E-04	mg/kg/day	2.2E-06
				Iron	6.5E+03	mg/kg	NA		NA		NA	3.4E-06	mg/kg/day	7.0E-01	mg/kg/day	4.8E-06
				Vanadium	2.8E+01	mg/kg	NA		NA		NA	1.4E-08	mg/kg/day	1.3E-04	mg/kg/day	1.1E-04
			Exp. Route Total								0.0E+00					4.0E-04
		Exposure Point Total									0.0E+00					4.9E-02
	Exposure Medium Total										0.0E+00					4.9E-02
Soil* in Flight Line Area Total											0.0E+00					4.9E-02

TABLE H 7.1.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	NA		NA		NA	1.0E-05	mg/kg/day	2.0E-01	mg/kg/day	5.1E-05
				2-Hexanone	1.4E+01	µg/L	NA		NA		NA	1.8E-04	mg/kg/day	5.0E-03	mg/kg/day	3.6E-02
				Benzene	2.3E+00	µg/L	NA		NA		NA	2.9E-05	mg/kg/day	4.0E-03	mg/kg/day	7.3E-03
				Chloroform	6.9E-01	µg/L	NA		NA		NA	8.9E-06	mg/kg/day	1.0E-02	mg/kg/day	8.9E-04
				cis-1,2-Dichloroethene	3.6E+01	µg/L	NA		NA		NA	4.6E-04	mg/kg/day	1.0E-02	mg/kg/day	4.6E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	NA		NA		NA	8.3E-05	mg/kg/day	2.0E-01	mg/kg/day	4.1E-04
				Ethylbenzene	9.2E-01	µg/L	NA		NA		NA	1.2E-05	mg/kg/day	1.0E-01	mg/kg/day	1.2E-04
				Tetrachloroethene	1.9E+02	µg/L	NA		NA		NA	2.4E-03	mg/kg/day	1.0E-02	mg/kg/day	2.4E-01
				Trichloroethene	4.5E+01	µg/L	NA		NA		NA	5.8E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	NA		NA		NA	1.3E-04	mg/kg/day	3.0E-03	mg/kg/day	4.3E-02
				Naphthalene	1.9E-01	µg/L	NA		NA		NA	2.4E-06	mg/kg/day	2.0E-02	mg/kg/day	1.2E-04
				Antimony	3.4E+00	µg/L	NA		NA		NA	4.4E-05	mg/kg/day	4.0E-04	mg/kg/day	1.1E-01
				Iron	5.3E+03	µg/L	NA		NA		NA	6.8E-02	mg/kg/day	7.0E-01	mg/kg/day	9.7E-02
										Exp. Route Total	0.0E+00					5.8E-01
			Dermal Absorption[2]	1,1-Dichloroethane	7.9E-01	mg/kg	NA		NA		NA	7.5E-07	mg/kg/day	2.0E-01	mg/kg/day	3.8E-06
				2-Hexanone	1.4E+01	mg/kg	NA		NA		NA	7.0E-06	mg/kg/day	5.0E-03	mg/kg/day	1.4E-03
				Benzene	2.3E+00	mg/kg	NA		NA		NA	4.1E-06	mg/kg/day	4.0E-03	mg/kg/day	1.0E-03
				Chloroform	6.9E-01	mg/kg	NA		NA		NA	7.6E-07	mg/kg/day	1.0E-02	mg/kg/day	7.6E-05
				cis-1,2-Dichloroethene	3.6E+01	mg/kg	NA		NA		NA	3.8E-05	mg/kg/day	1.0E-02	mg/kg/day	3.8E-03
				Dichlorodifluoromethane (Freon-12)	6.5E+00	mg/kg	NA		NA		NA	9.4E-06	mg/kg/day	2.0E-01	mg/kg/day	4.7E-05
				Ethylbenzene	9.2E-01	mg/kg	NA		NA		NA	6.7E-06	mg/kg/day	1.0E-01	mg/kg/day	6.7E-05
				Tetrachloroethene	1.9E+02	mg/kg	NA		NA		NA	1.4E-03	mg/kg/day	1.0E-02	mg/kg/day	1.4E-01
				Trichloroethene	4.5E+01	mg/kg	NA		NA		NA	9.1E-05	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	mg/kg	NA		NA		NA	6.2E-06	mg/kg/day	3.0E-03	mg/kg/day	2.1E-03
				Naphthalene	1.9E-01	mg/kg	NA		NA		NA	1.5E-06	mg/kg/day	2.0E-02	mg/kg/day	7.5E-05
				Antimony	3.4E+00	mg/kg	NA		NA		NA	1.4E-07	mg/kg/day	6.0E-05	mg/kg/day	2.3E-03
				Iron	5.3E+03	mg/kg	NA		NA		NA	2.2E-04	mg/kg/day	7.0E-01	mg/kg/day	3.1E-04
										Exp. Route Total	0.0E+00					1.5E-01
										Exposure Point Total	0.0E+00					7.3E-01
										Exposure Medium Total	0.0E+00					7.3E-01
										Groundwater Group 1 Total	0.0E+00					7.3E-01

TABLE H 7.1.CTE

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Ingestion	Benzene	1.8E+00	µg/L	NA		NA		NA	1.7E-05	mg/kg/day	4.0E-03	mg/kg/day	4.1E-03
				cis-1,2-Dichloroethene	1.6E+02	µg/L	NA		NA		NA	1.5E-03	mg/kg/day	1.0E-02	mg/kg/day	1.5E-01
				trans-1,2-Dichloroethene	5.2E+00	µg/L	NA		NA		NA	4.7E-05	mg/kg/day	2.0E-02	mg/kg/day	2.4E-03
				Trichloroethene	1.6E+02	µg/L	NA		NA		NA	1.4E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	NA		NA		NA	2.1E-04	mg/kg/day	3.0E-03	mg/kg/day	6.9E-02
				Exp. Route Total							0.0E+00					2.2E-01
			Dermal Absorption[2]	Benzene	1.8E+00	mg/kg	NA		NA		NA	1.7E-05	mg/kg/day	4.0E-03	mg/kg/day	4.3E-03
				cis-1,2-Dichloroethene	1.6E+02	mg/kg	NA		NA		NA	1.7E-04	mg/kg/day	1.0E-02	mg/kg/day	1.7E-02
				trans-1,2-Dichloroethene	5.2E+00	mg/kg	NA		NA		NA	3.3E-05	mg/kg/day	2.0E-02	mg/kg/day	1.6E-03
				Trichloroethene	1.6E+02	mg/kg	NA		NA		NA	2.2E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	mg/kg	NA		NA		NA	6.6E-05	mg/kg/day	3.0E-03	mg/kg/day	2.2E-02
				Exp. Route Total							0.0E+00					4.5E-02
		Exposure Point Total									0.0E+00					2.7E-01
	Exposure Medium Total										0.0E+00					2.7E-01
Groundwater Group 4 Total											0.0E+00					2.7E-01
Total of Receptor Risks Across All Media											0.0E+00	Total of Receptor Hazards Across All Media				7.9E-01

Notes:

* Soil = combined surface and subsurface soil

[1] Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

[2] DAevent for dermal exposure to groundwater calculated on Tables H 7.1.CTE Supplements A-C.

TABLE H 4 7.1.CTE SUPPLEMENT A

Calculation of DAevent - Adult Resident, Surficial Groundwater Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
1,1-Dichloroethane	7.9E-01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	0.25	4.6E-09	2
2-Hexanone[1]	1.4E+01	3.6E-03	1.4E-02	3.8E-01	9.2E-01	1.0E+00	0.25	4.2E-08	2
Benzene	2.3E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.25	2.5E-08	2
Chloroform	6.9E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.25	4.6E-09	2
cis-1,2-Dichloroethene[1]	3.6E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.25	2.3E-07	2
Dichlorodifluoromethane (Freon-12)	6.5E+00	9.0E-03	3.8E-02	5.1E-01	1.2E+00	1.0E+00	0.25	5.7E-08	2
Ethylbenzene	9.2E-01	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	0.25	4.1E-08	2
Tetrachloroethene	1.9E+02	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.25	8.4E-06	2
Trichloroethene	4.5E+01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.25	5.5E-07	2
Vinyl chloride	1.0E+01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	0.25	3.8E-08	2
Naphthalene	1.9E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	0.25	9.1E-09	2
Antimony	3.4E+00	1.0E-03	NA	NA	NA	NA	0.25	8.5E-10	1
Iron	5.3E+03	1.0E-03	NA	NA	NA	NA	0.25	1.3E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.1.CTE SUPPLEMENT B

Calculation of DA_{event}

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	MW	log Kow	Kow	log Kp[1]	Kp (cm/hr)	B[1]	log D_{sc}/l_{sc}[1]	D_{sc}/l_{sc}[1]	l_{sc} (cm)	D_{sc} (cm^2/hr)	τ_{event}[1] (hr)	c[1]	b[1]	t*[1] (hr)
Benzo(k)fluoranthene	2.52E+02	6.11E+00	1.29E+06	-1.81E-01	6.59E-01	4.03E+00	-4.21E+00	6.12E-05	1.00E-03	6.12E-08	2.72E+00	4.09E+00	1.20E+01	1.18E+01

Notes:

[1] Equations from Risk Assessment Guidance for Superfund Volume 1; Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005. July 2004.

MW and log Kow from Texas Commission on Environmental Quality (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).

TABLE H 7.1.CTE SUPPLEMENT C

Calculation Of DAevent—Adult Resident, Upper Aquifer Plume 1 Groundwater Group 4

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Benzene	1.8E+00	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1.0E+00	0.25	1.1E-07	2
cis-1,2-Dichloroethene[1]	1.6E+02	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.25	1.0E-06	2
trans-1,2-Dichloroethene	5.2E+00	2.9E-02	3.7E-01	8.9E-01	1.0E+00	1.0E+00	0.25	2.0E-07	2
Trichloroethene	1.6E+02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1.0E+00	0.25	1.3E-05	2
Vinyl chloride	2.3E+01	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1.0E+00	0.25	4.0E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.2.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	5.3E-02	mg/kg	NA		NA		NA	2.2E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	NA		NA		NA	1.8E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	NA		NA		NA	2.6E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	1.7E-07	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	NA		NA		NA	2.5E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	NA		NA		NA	1.4E-07	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	NA		NA		NA	3.3E-02	mg/kg/day	1.0E+00	mg/kg/day	3.3E-02
				Arsenic	1.2E+00	mg/kg	NA		NA		NA	5.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.7E-02
				Chromium	1.2E+01	mg/kg	NA		NA		NA	5.0E-05	mg/kg/day	3.0E-03	mg/kg/day	1.7E-02
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	5.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.8E-02
				Iron	3.2E+03	mg/kg	NA		NA		NA	1.4E-02	mg/kg/day	7.0E-01	mg/kg/day	2.0E-02
										Exp. Route Total	0.0E+00					1.0E-01
			Dermal Absorption[1]	Benzo(a)anthracene	5.3E-02	mg/kg	NA		NA		NA	3.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	NA		NA		NA	2.6E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	NA		NA		NA	3.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	2.4E-08	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	NA		NA		NA	3.7E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	NA		NA		NA	2.0E-08	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	NA		NA		NA	3.7E-05	mg/kg/day	1.0E+00	mg/kg/day	3.7E-05
				Arsenic	1.2E+00	mg/kg	NA		NA		NA	1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	5.8E-04
				Chromium	1.2E+01	mg/kg	NA		NA		NA	5.6E-08	mg/kg/day	7.5E-05	mg/kg/day	7.4E-04
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	6.0E-09	mg/kg/day	3.0E-04	mg/kg/day	2.0E-05
				Iron	3.2E+03	mg/kg	NA		NA		NA	1.5E-05	mg/kg/day	7.0E-01	mg/kg/day	2.2E-05
										Exp. Route Total	0.0E+00					1.4E-03
										Exposure Medium Total	0.0E+00					1.1E-01
										Soil* in Industrial Area Total	0.0E+00					1.1E-01

TABLE H 7.2.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene	2.3E-02	mg/kg	NA		NA		NA	9.7E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.9E-02	mg/kg	NA		NA		NA	1.2E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	1.7E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E-02	mg/kg	NA		NA		NA	9.9E-08	mg/kg/day	NA		NA
				Chrysene	2.9E-02	mg/kg	NA		NA		NA	1.2E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	NA		NA		NA	1.0E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	NA		NA		NA	9.5E-08	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	NA		NA		NA	6.5E-02	mg/kg/day	1.0E+00	mg/kg/day	6.5E-02
				Arsenic	2.9E+00	mg/kg	NA		NA		NA	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.1E-02
				Chromium	1.8E+01	mg/kg	NA		NA		NA	7.6E-05	mg/kg/day	3.0E-03	mg/kg/day	2.5E-02
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	5.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.8E-02
				Iron	6.5E+03	mg/kg	NA		NA		NA	2.8E-02	mg/kg/day	7.0E-01	mg/kg/day	4.0E-02
				Vanadium	2.8E+01	mg/kg	NA		NA		NA	1.2E-04	mg/kg/day	5.0E-03	mg/kg/day	2.4E-02
										Exp. Route Total	0.0E+00					2.1E-01
			Dermal Absorption[1]	Benzo(a)anthracene	2.3E-02	mg/kg	NA		NA		NA	1.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.9E-02	mg/kg	NA		NA		NA	1.8E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.9E-02	mg/kg	NA		NA		NA	2.5E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E-02	mg/kg	NA		NA		NA	1.4E-08	mg/kg/day	NA		NA
				Chrysene	2.9E-02	mg/kg	NA		NA		NA	1.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	NA		NA		NA	1.5E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	NA		NA		NA	1.4E-08	mg/kg/day	NA		NA
				Aluminum	1.5E+04	mg/kg	NA		NA		NA	7.3E-05	mg/kg/day	1.0E+00	mg/kg/day	7.3E-05
				Arsenic	2.9E+00	mg/kg	NA		NA		NA	4.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.4E-03
				Chromium	1.8E+01	mg/kg	NA		NA		NA	8.5E-08	mg/kg/day	7.5E-05	mg/kg/day	1.1E-03
				Cobalt	1.2E+00	mg/kg	NA		NA		NA	6.0E-09	mg/kg/day	3.0E-04	mg/kg/day	2.0E-05
				Iron	6.5E+03	mg/kg	NA		NA		NA	3.1E-05	mg/kg/day	7.0E-01	mg/kg/day	4.4E-05
				Vanadium	2.8E+01	mg/kg	NA		NA		NA	1.3E-07	mg/kg/day	1.3E-04	mg/kg/day	1.0E-03
										Exp. Route Total	0.0E+00					3.7E-03
										Exposure Point Total	0.0E+00					2.2E-01
										Exposure Medium Total	0.0E+00					2.2E-01
										Soil* in Flight Line Area Total	0.0E+00					2.2E-01

TABLE H 7.2.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	NA		NA		NA	3.4E-05	mg/kg/day	2.0E-01	mg/kg/day	1.7E-04
				2-Hexanone	1.4E+01	µg/L	NA		NA		NA	6.0E-04	mg/kg/day	5.0E-03	mg/kg/day	1.2E-01
				Benzene	2.3E+00	µg/L	NA		NA		NA	9.7E-05	mg/kg/day	4.0E-03	mg/kg/day	2.4E-02
				Chloroform	6.9E-01	µg/L	NA		NA		NA	3.0E-05	mg/kg/day	1.0E-02	mg/kg/day	3.0E-03
				cis-1,2-Dichloroethene	3.6E+01	µg/L	NA		NA		NA	1.5E-03	mg/kg/day	1.0E-02	mg/kg/day	1.5E-01
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	NA		NA		NA	2.8E-04	mg/kg/day	2.0E-01	mg/kg/day	1.4E-03
				Ethylbenzene	9.2E-01	µg/L	NA		NA		NA	3.9E-05	mg/kg/day	1.0E-01	mg/kg/day	3.9E-04
				Tetrachloroethene	1.9E+02	µg/L	NA		NA		NA	8.1E-03	mg/kg/day	1.0E-02	mg/kg/day	8.1E-01
				Trichloroethene	4.5E+01	µg/L	NA		NA		NA	1.9E-03	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	NA		NA		NA	4.3E-04	mg/kg/day	3.0E-03	mg/kg/day	1.4E-01
				Naphthalene	1.9E-01	µg/L	NA		NA		NA	8.1E-06	mg/kg/day	2.0E-02	mg/kg/day	4.1E-04
				Antimony	3.4E+00	µg/L	NA		NA		NA	1.5E-04	mg/kg/day	4.0E-04	mg/kg/day	3.6E-01
				Iron	5.3E+03	µg/L	NA		NA		NA	2.3E-01	mg/kg/day	7.0E-01	mg/kg/day	3.2E-01
										Exp. Route Total	0.0E+00					1.9E+00
			Dermal Absorption[2]	1,1-Dichloroethane	7.9E-01	mg/kg	NA		NA		NA	1.5E-06	mg/kg/day	2.0E-01	mg/kg/day	7.4E-06
				2-Hexanone	1.4E+01	mg/kg	NA		NA		NA	1.4E-05	mg/kg/day	5.0E-03	mg/kg/day	2.8E-03
				Benzene	2.3E+00	mg/kg	NA		NA		NA	8.1E-06	mg/kg/day	4.0E-03	mg/kg/day	2.0E-03
				Chloroform	6.9E-01	mg/kg	NA		NA		NA	1.5E-06	mg/kg/day	1.0E-02	mg/kg/day	1.5E-04
				cis-1,2-Dichloroethene	3.6E+01	mg/kg	NA		NA		NA	7.5E-05	mg/kg/day	1.0E-02	mg/kg/day	7.5E-03
				Dichlorodifluoromethane (Freon-12)	6.5E+00	mg/kg	NA		NA		NA	1.8E-05	mg/kg/day	2.0E-01	mg/kg/day	9.2E-05
				Ethylbenzene	9.2E-01	mg/kg	NA		NA		NA	1.3E-05	mg/kg/day	1.0E-01	mg/kg/day	1.3E-04
				Tetrachloroethene	1.9E+02	mg/kg	NA		NA		NA	2.7E-03	mg/kg/day	1.0E-02	mg/kg/day	2.7E-01
				Trichloroethene	4.5E+01	mg/kg	NA		NA		NA	1.8E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	mg/kg	NA		NA		NA	1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.1E-03
				Naphthalene	1.9E-01	mg/kg	NA		NA		NA	3.0E-06	mg/kg/day	2.0E-02	mg/kg/day	1.5E-04
				Antimony	3.4E+00	mg/kg	NA		NA		NA	3.2E-07	mg/kg/day	6.0E-05	mg/kg/day	5.3E-03
				Iron	5.3E+03	mg/kg	NA		NA		NA	4.9E-04	mg/kg/day	7.0E-01	mg/kg/day	7.0E-04
										Exp. Route Total	0.0E+00					2.9E-01
										Exposure Point Total	0.0E+00					2.2E+00
										Exposure Medium Total	0.0E+00					2.2E+00

TABLE H 7.2.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Air Group 1	Surficial Aquifer Water Vapors at Showerhead	Inhalation	1,1-Dichloroethane	1.1E-03	mg/m^3	NA		NA		NA	4.2E-06	mg/m^3	NA		NA
				2-Hexanone	5.7E-03	mg/m^3	NA		NA		NA	2.2E-05	mg/m^3	3.0E-02	mg/m3	7.3E-04
				Benzene	3.6E-03	mg/m^3	NA		NA		NA	1.4E-05	mg/m^3	3.0E-02	mg/m3	4.6E-04
				Chloroform	8.4E-04	mg/m^3	NA		NA		NA	3.3E-06	mg/m^3	9.8E-02	mg/m3	3.3E-05
				cis-1,2-Dichloroethene	4.9E-02	mg/m^3	NA		NA		NA	1.9E-04	mg/m^3	NA		NA
				Dichlorodifluoromethane (Freon-12)	8.3E-03	mg/m^3	NA		NA		NA	3.2E-05	mg/m^3	2.0E-01	mg/m3	1.6E-04
				Ethylbenzene	1.2E-03	mg/m^3	NA		NA		NA	4.8E-06	mg/m^3	1.0E+00	mg/m3	4.7E-06
				Tetrachloroethene	2.1E-01	mg/m^3	NA		NA		NA	8.1E-04	mg/m^3	2.7E-01	mg/m3	3.0E-03
				Trichloroethene	5.5E-02	mg/m^3	NA		NA		NA	2.1E-04	mg/m^3	NA		NA
				Vinyl chloride	1.7E-02	mg/m^3	NA		NA		NA	6.7E-05	mg/m^3	1.0E-01	mg/m3	6.7E-04
				Naphthalene	1.6E-04	mg/m^3	NA		NA		NA	6.0E-07	mg/m^3	3.0E-03	mg/m3	2.0E-04
										Exp. Route Total	0.0E+00					5.3E-03
										Exposure Medium Total	0.0E+00					5.3E-03
										Groundwater Group 1 Total	0.0E+00					2.2E+00
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	NA		NA		NA	1.6E-05	mg/kg/day	1.0E-02	mg/kg/day	1.6E-03
				Benzo(a)pyrene	2.0E-01	µg/L	NA		NA		NA	8.5E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L	NA		NA		NA	1.6E-05	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L	NA		NA		NA	1.3E-05	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L	NA		NA		NA	2.4E-05	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	NA		NA		NA	1.9E-05	mg/kg/day	NA		NA
				Chromium	7.6E+01	µg/L	NA		NA		NA	3.2E-03	mg/kg/day	3.0E-03	mg/kg/day	1.1E+00
										Exp. Route Total	0.0E+00					1.1E+00
			Dermal Absorption[2]	Chloroform	3.8E-01	mg/kg	NA		NA		NA	8.2E-07	mg/kg/day	1.0E-02	mg/kg/day	8.2E-05
				Benzo(a)pyrene	2.0E-01	mg/kg	NA		NA		NA	1.0E-04	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	mg/kg	NA		NA		NA	2.0E-04	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	mg/kg	NA		NA		NA	1.5E-04	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	mg/kg	NA		NA		NA	4.7E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	mg/kg	NA		NA		NA	1.1E-06	mg/kg/day	NA		NA
				Chromium	7.6E+01	mg/kg	NA		NA		NA	1.4E-05	mg/kg/day	7.5E-05	mg/kg/day	1.9E-01
										Exp. Route Total	0.0E+00					1.9E-01
										Exposure Point Total	0.0E+00					1.3E+00
										Exposure Medium Total	0.0E+00					1.3E+00

TABLE H 7.2.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Air Group 3	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Chloroform	4.6E-04	mg/m^3	NA		NA		NA	1.8E-06	mg/m^3	9.8E-02	mg/m3	1.8E-05
			Exp. Route Total								0.0E+00					1.8E-05
	Exposure Medium Total										0.0E+00					1.8E-05
Groundwater	Groundwater Group 4	Upper Castle-Hayne Aquifer - Plume 1 Tap Water	Ingestion	Benzene	1.8E+00	µg/L	NA		NA		NA	7.7E-05	mg/kg/day	4.0E-03	mg/kg/day	1.9E-02
				cis-1,2-Dichloroethene	1.6E+02	µg/L	NA		NA		NA	6.9E-03	mg/kg/day	1.0E-02	mg/kg/day	6.9E-01
				trans-1,2-Dichloroethene	5.2E+00	µg/L	NA		NA		NA	2.2E-04	mg/kg/day	2.0E-02	mg/kg/day	1.1E-02
				Trichloroethene	1.6E+02	µg/L	NA		NA		NA	6.7E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	NA		NA		NA	9.6E-04	mg/kg/day	3.0E-03	mg/kg/day	3.2E-01
			Exp. Route Total								0.0E+00					1.0E+00
			Dermal Absorption[2]	Benzene	1.8E+00	mg/kg	NA		NA		NA	3.4E-05	mg/kg/day	4.0E-03	mg/kg/day	8.5E-03
				cis-1,2-Dichloroethene	1.6E+02	mg/kg	NA		NA		NA	3.3E-04	mg/kg/day	1.0E-02	mg/kg/day	3.3E-02
				trans-1,2-Dichloroethene	5.2E+00	mg/kg	NA		NA		NA	6.4E-05	mg/kg/day	2.0E-02	mg/kg/day	3.2E-03
				Trichloroethene	1.6E+02	mg/kg	NA		NA		NA	4.3E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	mg/kg	NA		NA		NA	1.3E-04	mg/kg/day	3.0E-03	mg/kg/day	4.3E-02
			Exp. Route Total								0.0E+00					8.9E-02
		Exposure Point Total									0.0E+00					1.1E+00
	Exposure Medium Total										0.0E+00					1.1E+00
	Groundwater Air Group 4	Upper Aquifer - Plume 1 Water Vapors at Showerhead	Inhalation	Benzene	2.8E-03	mg/m^3	NA		NA		NA	1.2E-07	mg/m^3	3.0E-02	mg/m3	4.0E-06
				cis-1,2-Dichloroethene	2.2E-01	mg/m^3	NA		NA		NA	9.3E-06	mg/m^3	NA		NA
				trans-1,2-Dichloroethene	7.0E-03	mg/m^3	NA		NA		NA	3.0E-07	mg/m^3	6.0E-02	mg/m3	5.0E-06
				Trichloroethene	1.9E-01	mg/m^3	NA		NA		NA	8.1E-06	mg/m^3	NA		NA
				Vinyl chloride	3.9E-02	mg/m^3	NA		NA		NA	1.7E-06	mg/m^3	1.0E-01	mg/m3	1.7E-05
			Exp. Route Total								0.0E+00					2.6E-05
	Exposure Medium Total										0.0E+00					2.6E-05
Groundwater Group 4 Total											0.0E+00					1.1E+00
Total of Receptor Risks Across All Media											0.0E+00	Total of Receptor Hazards Across All Media				2.6E+00

Notes:

* Soil = combined surface and subsurface soil

[1] Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

[2] DAevent for dermal exposure to groundwater calculated on Tables H 7.2.CTE Supplements A-C.

[3] Inhalation exposures calculated on Tables H 7.2.CTE Supplement D-F.

TABLE H 7.2.CTE SUPPLEMENT A

Calculation of DAevent—Child Resident, Surficial Groundwater Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
1,1-Dichloroethane	7.9E-01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	0.33	5.2E-09	2
2-Hexanone[1]	1.4E+01	3.6E-03	1.4E-02	3.8E-01	9.2E-01	1.0E+00	0.33	4.9E-08	2
Benzene	2.3E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.33	2.9E-08	2
Chloroform	6.9E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.33	5.3E-09	2
cis-1,2-Dichloroethene[1]	3.6E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.33	2.7E-07	2
Dichlorodifluoromethane (Freon-12)	6.5E+00	9.0E-03	3.8E-02	5.1E-01	1.2E+00	1.0E+00	0.33	6.5E-08	2
Ethylbenzene	9.2E-01	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	0.33	4.7E-08	2
Tetrachloroethene	1.9E+02	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.33	9.6E-06	2
Trichloroethene	4.5E+01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.33	6.4E-07	2
Vinyl chloride	1.0E+01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	0.33	4.3E-08	2
Naphthalene	1.9E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	0.33	1.1E-08	2
Antimony	3.4E+00	1.0E-03	NA	NA	NA	NA	0.33	1.1E-09	1
Iron	5.3E+03	1.0E-03	NA	NA	NA	NA	0.33	1.7E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.2.CTE SUPPLEMENT B

Calculation of DAevent - Child Resident, Middle Castle-Hayne Groundwater Group 3

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Chloroform	3.8E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.33	2.9E-09	2
Benzo(a)pyrene	2.0E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	0.33	3.7E-07	2
Benzo(b)fluoranthene	3.8E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	0.33	7.1E-07	2
Benzo(k)fluoranthene[1]	3.1E-01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	0.33	5.4E-07	2
Dibenz(a,h)anthracene	5.5E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	6.0E-01	0.33	1.7E-08	2
Indeno(1,2,3-cd)pyrene	4.5E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	6.0E-01	0.33	3.8E-09	2
Chromium	7.6E+01	2.0E-03	NA	NA	NA	NA	0.33	5.0E-08	1

Inorganics: DA_{event} (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If $t_{event}<t^*$, then DA_{event} =

$2 \times FA \times Kp \times CW \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event})/\pi))$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 2)

If $t_{event}>t^*$, then DA_{event} =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2)$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 ($t^* = 2.4\ t_{event}$) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.2.CTE SUPPLEMENT C

Calculation Of DAevent—Child Resident, Upper Aquifer Plume 1 Groundwater Group 4

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Benzene	1.8E+00	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1.0E+00	0.33	1.2E-07	2
cis-1,2-Dichloroethene[1]	1.6E+02	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.33	1.2E-06	2
trans-1,2-Dichloroethene	5.2E+00	2.9E-02	3.7E-01	8.9E-01	1.0E+00	1.0E+00	0.33	2.3E-07	2
Trichloroethene	1.6E+02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1.0E+00	0.33	1.5E-05	2
Vinyl chloride	2.3E+01	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1.0E+00	0.33	4.6E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If $t_{event} < t^*$, then DA_{event} =

$2 \times FA \times Kp \times CW \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event})/\pi))$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 2)

If $t_{event} > t^*$, then DA_{event} =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2)$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 ($t^* = 2.4\ t_{event}$) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.2.CTE SUPPLEMENT D

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
1,1-Dichloroethane	7.9E-01	9.9E+01	5.6E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	1.1E-01	8.8E-02	1.1E-03
2-Hexanone	1.4E+01	1.0E+02	9.3E-05	1.3E+03	1.3E+01	3.6E+00	4.9E+00	5.6E-01	4.6E-01	5.7E-03
Benzene	2.3E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	3.5E-01	2.9E-01	3.6E-03
Chloroform	6.9E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	8.3E-02	6.9E-02	8.4E-04
cis-1,2-Dichloroethene	3.6E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.8E+00	4.0E+00	4.9E-02
Dichlorodifluoromethane (Freon-12)	6.5E+00	1.2E+02	3.4E-01	1.2E+03	1.2E+01	1.2E+01	1.6E+01	8.2E-01	6.8E-01	8.3E-03
Ethylbenzene	9.2E-01	1.1E+02	7.9E-03	1.2E+03	1.3E+01	1.2E+01	1.7E+01	1.2E-01	1.0E-01	1.2E-03
Tetrachloroethene	1.9E+02	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.1E+01	1.7E+01	2.1E-01
Trichloroethene	4.5E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	5.4E+00	4.5E+00	5.5E-02
Vinyl chloride	1.0E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	1.7E+00	1.4E+00	1.7E-02
Naphthalene	1.9E-01	1.3E+02	4.4E-04	1.1E+03	1.2E+01	7.5E+00	1.0E+01	1.5E-02	1.3E-02	1.6E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	20
Dt - total duration in shower room	min	30
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

TABLE H 7.2.CTE SUPPLEMENT D

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.2.CTE SUPPLEMENT E

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 3

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Chloroform	3.8E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	4.6E-02	3.8E-02	4.6E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	20
Dt - total duration in shower room	min	30
R - air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.2.CTE SUPPLEMENT F

Inhalation Exposure Concentrations from Foster and Chrostowsk Shower Model, Upper Aquifer—Plume 1 Groundwater Air Group 4

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	1.8E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	2.8E-01	2.3E-01	2.8E-03
cis-1,2-Dichloroethene	1.6E+02	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.1E+01	1.8E+01	2.2E-01
trans-1,2-Dichloroethene	5.2E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	6.9E-01	5.8E-01	7.0E-03
Trichloroethene	1.6E+02	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	1.9E+01	1.6E+01	1.9E-01
Vinyl chloride	2.3E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	3.9E+00	3.2E+00	3.9E-02

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	20
Dt - total duration in shower room	min	30
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	3000 * (18 / MW)$^{0.5}$
Equation 2:	Kl(VOC) =	20 * (44 / MW)$^{0.5}$
Equation 3:	KL =	((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))$^{-1}$
Equation 4:	Kal =	(KL * (((Tl * Us) / (Ts * Ul))$^{-0.5}$))
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.3.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene[2]	5.3E-02	mg/kg			7.3E-01	mg/kg/day	8.6E-08	NA		NA		NA
				Benzo(a)pyrene[2]	4.1E-02	mg/kg			7.3E+00	mg/kg/day	6.8E-07	NA		NA		NA
				Benzo(b)fluoranthene[2]	6.0E-02	mg/kg			7.3E-01	mg/kg/day	9.8E-08	NA		NA		NA
				Benzo(k)fluoranthene[2]	3.9E-02	mg/kg			7.3E-02	mg/kg/day	6.3E-09	NA		NA		NA
				Chrysene[2]	5.9E-02	mg/kg			7.3E-03	mg/kg/day	9.7E-10	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[2]	3.2E-02	mg/kg			7.3E-01	mg/kg/day	5.2E-08	NA		NA		NA
				Aluminum	7.7E+03	mg/kg	8.0E-03	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	1.2E+00	mg/kg	1.3E-06	mg/kg/day	1.5E+00	mg/kg/day	1.9E-06	NA		NA		NA
				Chromium[2]	1.2E+01	mg/kg			5.0E-01	mg/kg/day	1.3E-05	NA		NA		NA
				Cobalt	1.2E+00	mg/kg	1.3E-06	mg/kg/day	NA		NA	NA		NA		NA
				Iron	3.2E+03	mg/kg	3.4E-03	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.6E-05					0.0E+00
			Dermal Absorption[1]	Benzo(a)anthracene[2]	5.3E-02	mg/kg			7.3E-01	mg/kg/day	4.4E-07	NA		NA		NA
				Benzo(a)pyrene[2]	4.1E-02	mg/kg			7.3E+00	mg/kg/day	3.4E-06	NA		NA		NA
				Benzo(b)fluoranthene[2]	6.0E-02	mg/kg			7.3E-01	mg/kg/day	5.0E-07	NA		NA		NA
				Benzo(k)fluoranthene[2]	3.9E-02	mg/kg			7.3E-02	mg/kg/day	3.2E-08	NA		NA		NA
				Chrysene[2]	5.9E-02	mg/kg			7.3E-03	mg/kg/day	4.9E-09	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[2]	3.2E-02	mg/kg			7.3E-01	mg/kg/day	2.7E-07	NA		NA		NA
				Aluminum	7.7E+03	mg/kg	2.5E-05	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	1.2E+00	mg/kg	1.2E-07	mg/kg/day	1.5E+00	mg/kg/day	1.8E-07	NA		NA		NA
				Chromium[2]	1.2E+01	mg/kg	3.8E-08	mg/kg/day	1.3E-02	mg/kg/day	4.8E-10	NA		NA		NA
				Cobalt	1.2E+00	mg/kg	4.1E-09	mg/kg/day	NA		NA	NA		NA		NA
				Iron	3.2E+03	mg/kg	1.1E-05	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	4.9E-06					0.0E+00
										Exposure Medium Total	2.1E-05					0.0E+00
										Soil* in Industrial Area Total	2.1E-05					0.0E+00

TABLE H 7.3.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene[2]	2.3E-02	mg/kg			7.3E-01	mg/kg/day	3.7E-08	NA		NA		NA
				Benzo(a)pyrene[2]	2.9E-02	mg/kg			7.3E+00	mg/kg/day	4.7E-07	NA		NA		NA
				Benzo(b)fluoranthene[2]	3.9E-02	mg/kg			7.3E-01	mg/kg/day	6.5E-08	NA		NA		NA
				Benzo(k)fluoranthene[2]	2.3E-02	mg/kg			7.3E-02	mg/kg/day	3.8E-09	NA		NA		NA
				Chrysene[2]	2.9E-02	mg/kg			7.3E-03	mg/kg/day	4.7E-10	NA		NA		NA
				Dibenz(a,h)anthracene[2]	2.4E-03	mg/kg			7.3E+00	mg/kg/day	3.9E-08	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[2]	2.2E-02	mg/kg			7.3E-01		3.7E-08	NA		NA		NA
				Aluminum	1.5E+04	mg/kg	1.6E-02	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	2.9E+00	mg/kg	3.0E-06	mg/kg/day	1.5E+00	mg/kg/day	4.5E-06	NA		NA		NA
				Chromium[2]	1.8E+01	mg/kg	1.9E-05	mg/kg/day	5.0E-01	mg/kg/day	9.3E-06	NA		NA		NA
				Cobalt	1.2E+00	mg/kg	1.3E-06	mg/kg/day	NA		NA	NA		NA		NA
				Iron	6.5E+03	mg/kg	6.8E-03	mg/kg/day	NA		NA	NA		NA		NA
				Vanadium	2.8E+01	mg/kg	2.9E-05	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.4E-05					0.0E+00
			Dermal Absorption[1]	Benzo(a)anthracene[2]	2.3E-02	mg/kg			7.3E-01	mg/kg/day	1.9E-07	NA		NA		NA
				Benzo(a)pyrene[2]	2.9E-02	mg/kg			7.3E+00	mg/kg/day	2.4E-06	NA		NA		NA
				Benzo(b)fluoranthene[2]	3.9E-02	mg/kg			7.3E-01	mg/kg/day	3.3E-07	NA		NA		NA
				Benzo(k)fluoranthene[2]	2.3E-02	mg/kg			7.3E-02	mg/kg/day	1.9E-08	NA		NA		NA
				Chrysene[2]	2.9E-02	mg/kg			7.3E-03	mg/kg/day	2.4E-09	NA		NA		NA
				Dibenz(a,h)anthracene[2]	2.4E-03	mg/kg			7.3E-01	mg/kg/day	2.0E-07	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[2]	2.2E-02	mg/kg			7.3E-01	mg/kg/day	1.9E-07	NA		NA		NA
				Aluminum	1.5E+04	mg/kg	5.0E-05	mg/kg/day	NA	mg/kg/day	NA	NA		NA		NA
				Arsenic	2.9E+00	mg/kg	2.9E-07	mg/kg/day	1.5E+00	mg/kg/day	4.3E-07	NA		NA		NA
				Chromium[2]	1.8E+01	mg/kg			1.3E-02	mg/kg/day	4.5E-05	NA		NA		NA
				Cobalt	1.2E+00	mg/kg	4.1E-09	mg/kg/day	NA		NA	NA		NA		NA
				Iron	6.5E+03	mg/kg	2.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Vanadium	2.8E+01	mg/kg	9.1E-08	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	4.9E-05					0.0E+00
										Exposure Point Total	6.4E-05					0.0E+00
										Exposure Medium Total	6.4E-05					0.0E+00
										Soil* in Flight Line Area Total	6.4E-05					0.0E+00

TABLE H 7.3.CTE

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	4.2E-06	mg/kg/day	5.7E-03	mg/kg/day	2.4E-08	NA		NA		NA
				2-Hexanone	1.4E+01	µg/L	7.4E-05	mg/kg/day	NA		NA	NA		NA		NA
				Benzene	2.3E+00	µg/L	1.2E-05	mg/kg/day	5.5E-02	mg/kg/day	6.6E-07	NA		NA		NA
				Chloroform	6.9E-01	µg/L	3.7E-06	mg/kg/day	3.1E-02	mg/kg/day	1.1E-07	NA		NA		NA
				cis-1,2-Dichloroethene	3.6E+01	µg/L	1.9E-04	mg/kg/day	NA		NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	3.4E-05	mg/kg/day	NA		NA	NA		NA		NA
				Ethylbenzene	9.2E-01	µg/L	4.9E-06	mg/kg/day	1.1E-02	mg/kg/day	5.4E-08	NA		NA		NA
				Tetrachloroethene	1.9E+02	µg/L	1.0E-03	mg/kg/day	5.4E-01	mg/kg/day	5.5E-04	NA		NA		NA
				Trichloroethene	4.5E+01	µg/L	2.4E-04	mg/kg/day	5.9E-03	mg/kg/day	1.4E-06	NA		NA		NA
				Vinyl chloride	1.0E+01	µg/L	5.3E-05	mg/kg/day	7.2E-01	mg/kg/day	3.8E-05	NA		NA		NA
				Naphthalene	1.9E-01	µg/L	1.0E-06	mg/kg/day	NA		NA	NA		NA		NA
				Antimony	3.4E+00	µg/L	1.8E-05	mg/kg/day	NA		NA	NA		NA		NA
				Iron	5.3E+03	µg/L	2.8E-02	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	5.9E-04					0.0E+00
			Dermal Absorption	1,1-Dichloroethane	7.9E-01	µg/L	2.2E-07	mg/kg/day	5.7E-03	mg/kg/day	1.3E-09	NA		NA		NA
				2-Hexanone	1.4E+01	µg/L	2.1E-06	mg/kg/day	NA		NA	NA		NA		NA
				Benzene	2.3E+00	µg/L	1.2E-06	mg/kg/day	5.5E-02	mg/kg/day	6.8E-08	NA		NA		NA
				Chloroform	6.9E-01	µg/L	2.3E-07	mg/kg/day	3.1E-02	mg/kg/day	7.0E-09	NA		NA		NA
				cis-1,2-Dichloroethene	3.6E+01	µg/L	1.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	2.8E-06	mg/kg/day	NA		NA	NA		NA		NA
				Ethylbenzene	9.2E-01	µg/L	2.0E-06	mg/kg/day	1.1E-02	mg/kg/day	2.2E-08	NA		NA		NA
				Tetrachloroethene	1.9E+02	µg/L	4.1E-04	mg/kg/day	5.4E-01	mg/kg/day	2.2E-04	NA		NA		NA
				Trichloroethene	4.5E+01	µg/L	2.7E-05	mg/kg/day	5.9E-03	mg/kg/day	1.6E-07	NA		NA		NA
				Vinyl chloride	1.0E+01	µg/L	1.8E-06	mg/kg/day	7.2E-01	mg/kg/day	1.3E-06	NA		NA		NA
				Naphthalene	1.9E-01	µg/L	4.5E-07	mg/kg/day	NA		NA	NA		NA		NA
				Antimony	3.4E+00	µg/L	4.5E-08	mg/kg/day	NA		NA	NA		NA		NA
				Iron	5.3E+03	µg/L	7.0E-05	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	2.2E-04					0.0E+00
										Exposure Point Total	8.1E-04					0.0E+00
										Exposure Medium Total	8.1E-04					0.0E+00

TABLE H 7.3.CTE

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Air Group 1	Surficial Aquifer Water Vapors at Showerhead	Inhalation	1,1-Dichloroethane	4.2E+00	µg/m^3	1.6E-03	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	2.6E-09	NA		NA		NA
				2-Hexanone	2.2E+01	µg/m^3	8.5E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Benzene	1.4E+01	µg/m^3	5.4E-03	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	4.2E-08	NA		NA		NA
				Chloroform	3.3E+00	µg/m^3	1.3E-03	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	2.9E-08	NA		NA		NA
				cis-1,2-Dichloroethene	1.9E+02	µg/m^3	7.3E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	3.3E+01	µg/m^3	1.3E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Ethylbenzene	4.8E+00	µg/m^3	1.8E-03	µg/m^3	2.5E-06	(µg/m^3)$^{-1}$	4.6E-09	NA		NA		NA
				Tetrachloroethene	8.2E+02	µg/m^3	3.1E-01	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	1.9E-06	NA		NA		NA
				Trichloroethene	2.2E+02	µg/m^3	8.3E-02	µg/m^3	2.0E-06	(µg/m^3)$^{-1}$	1.7E-07	NA		NA		NA
				Vinyl chloride	6.8E+01	µg/m^3	2.6E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.1E-07	NA		NA		NA
				Naphthalene	6.1E-01	µg/m^3	2.3E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	8.0E-09	NA		NA		NA
										Exp. Route Total	2.2E-06					0.0E+00
										Exposure Medium Total	2.2E-06					0.0E+00
										Groundwater Group 1 Total	8.1E-04					0.0E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Tetrachloroethene	2.4E+00	µg/L	1.3E-05	mg/kg/day	5.4E-01	mg/kg/day	6.9E-06	NA		NA		NA
										Exp. Route Total	6.9E-06					0.0E+00
			Dermal Absorption	Tetrachloroethene	2.4E+00	mg/kg	2.2E-06	mg/kg/day	5.4E-01	mg/kg/day	1.2E-06	NA		NA		NA
										Exp. Route Total	1.2E-06					0.0E+00
										Exposure Point Total	8.1E-06					0.0E+00
										Exposure Medium Total	8.1E-06					0.0E+00
	Groundwater Air Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Tetrachloroethene	1.0E+01	µg/m^3	4.0E-03	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	2.3E-08	NA		NA		NA
										Exp. Route Total	2.3E-08					0.0E+00
										Exposure Medium Total	8.1E-06					0.0E+00
										Groundwater Group 2 Total	8.1E-06					0.0E+00

TABLE H 7.3.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	2.0E-06	mg/kg/day	3.1E-02	mg/kg/day	6.3E-08	NA		NA		NA
				Benzo(a)pyrene[2]	2.0E-01	µg/L			7.3E+00	mg/kg/day	4.5E-05	NA		NA		NA
				Benzo(b)fluoranthene[2]	3.8E-01	µg/L			7.3E-01	mg/kg/day	8.6E-06	NA		NA		NA
				Benzo(k)fluoranthene[2]	3.1E-01	µg/L			7.3E-02	mg/kg/day	7.0E-07	NA		NA		NA
				Dibenz(a,h)anthracene[2]	5.5E-01	µg/L			7.3E+00	mg/kg/day	1.2E-04	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[2]	4.5E-01	µg/L			7.3E-01	mg/kg/day	1.0E-05	NA		NA		NA
				Chromium[2]	7.6E+01	µg/L			5.0E-01	mg/kg/day	1.2E-03	NA		NA		NA
										Exp. Route Total	1.4E-03					0.0E+00
			Dermal Absorption	Chloroform	3.8E-01	µg/L	1.2E-07	mg/kg/day	3.1E-02	mg/kg/day	3.8E-09	NA		NA		NA
				Benzo(a)pyrene	2.0E-01	µg/L			7.3E+00	mg/kg/day	5.8E-04	NA		NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L			7.3E-01	mg/kg/day	1.1E-04	NA		NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L			7.3E-02	mg/kg/day	8.6E-06	NA		NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L			7.3E+00	mg/kg/day	2.7E-05	NA		NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L			7.3E-01	mg/kg/day	6.1E-07	NA		NA		NA
				Chromium[2]	7.6E+01	µg/L			1.3E-02	mg/kg/day	1.3E-07	NA		NA		NA
																0.0E+00
										Exp. Route Total	7.3E-04					0.0E+00
										Exposure Point Total	2.1E-03					0.0E+00
										Exposure Medium Total	2.1E-03					0.0E+00
	Groundwater Air Group 3	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Chloroform	1.8E+00	µg/m^3	7.0E-04	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	1.6E-08	NA		NA		NA
										Exp. Route Total	1.6E-08					0.0E+00
										Exposure Medium Total	2.1E-03					0.0E+00
										Groundwater Group 3 Total	2.1E-03					0.0E+00

TABLE H 7.3.CTE

Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Castle-Hayne Aquifer - Plume 1 Tap Water	Ingestion	Benzene	1.8E+00	µg/L	9.6E-06	mg/kg/day	5.5E-02	mg/kg/day	5.3E-07	NA		NA		NA
				cis-1,2-Dichloroethene	1.6E+02	µg/L	8.5E-04	mg/kg/day	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	5.2E+00	µg/L	2.8E-05	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.6E+02	µg/L	8.3E-04	mg/kg/day	5.9E-03	mg/kg/day	4.9E-06	NA		NA		NA
				Vinyl chloride	2.3E+01	µg/L	1.2E-04	mg/kg/day	7.2E-01	mg/kg/day	8.6E-05	NA		NA		NA
				Exp. Route Total							9.2E-05					0.0E+00
			Dermal Absorption	Benzene	1.8E+00	µg/L	5.2E-06	mg/kg/day	5.5E-02	mg/kg/day	2.8E-07	NA		NA		NA
				cis-1,2-Dichloroethene	1.6E+02	µg/L	5.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	5.2E+00	µg/L	9.7E-06	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.6E+02	µg/L	6.4E-04	mg/kg/day	5.9E-03	mg/kg/day	3.8E-06	NA		NA		NA
				Vinyl chloride	2.3E+01	µg/L	2.0E-05	mg/kg/day	7.2E-01	mg/kg/day	1.4E-05	NA		NA		NA
				Exp. Route Total							1.8E-05					0.0E+00
		Exposure Point Total									1.1E-04					0.0E+00
	Exposure Medium Total										1.1E-04					0.0E+00
	Groundwater Air Group 4	Upper Aquifer - Plume 1	Inhalation	Benzene	1.1E-02	$\mu g/m^3$	6.4E-06	$\mu g/m^3$	7.8E-06	$(\mu g/m^3)^{-1}$	5.0E-11	NA		NA		NA
				cis-1,2-Dichloroethene	8.6E-01	$\mu g/m^3$	4.9E-04	$\mu g/m^3$	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	2.8E-02	$\mu g/m^3$	1.6E-05	$\mu g/m^3$	NA		NA	NA		NA		NA
				Trichloroethene	7.5E-01	$\mu g/m^3$	4.3E-04	$\mu g/m^3$	2.0E-06	$(\mu g/m^3)^{-1}$	8.6E-10	NA		NA		NA
				Vinyl chloride	1.5E-01	$\mu g/m^3$	8.8E-05	$\mu g/m^3$	4.4E-06	$(\mu g/m^3)^{-1}$	3.9E-10	NA		NA		NA
				Exp. Route Total							1.3E-09					0.0E+00
	Exposure Medium Total										1.1E-04					0.0E+00
Groundwater Group 4 Total											1.1E-04					0.0E+00
Total of Receptor Risks Across All Media											8.9E-04	Total of Receptor Hazards Across All Media				0.0E+00

Notes:

* Soil = combined surface and subsurface soil

[1] Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

[2] See Table 7.3.CTE Supplement A for calculation of intake and cancer risk following MMOA method.

TABLE H 7.3.CTE SUPPLEMENT A

Calculation of Chemical Cancer Risks for COPC With Mutagenic Mode of Action—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations										
							Intake					CSF/Unit Risk					Cancer Risk
							Value				Units	Value				Units	
					Value	Units	0-2 years	2-6 years	6-16 years	16-30 years		0-2 years (ADAF=10)	2-6 years (ADAF=3)	6-16 years (ADAF=3)	16-30 years (ADAF=1)		
Soil	Soil	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	5.3E-02	mg/kg	6.4E-09	1.3E-08	3.4E-09	4.8E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	8.6E-08
				Benzo(a)pyrene	4.1E-02	mg/kg	5.1E-09	1.0E-08	2.7E-09	3.8E-09	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	6.8E-07
				Benzo(b)fluoranthene	6.0E-02	mg/kg	7.3E-09	1.5E-08	3.9E-09	5.5E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	9.8E-08
				Benzo(k)fluoranthene	3.9E-02	mg/kg	4.7E-09	9.5E-09	2.5E-09	3.6E-09	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	6.3E-09
				Chrysene	5.9E-02	mg/kg	7.2E-09	1.4E-08	3.9E-09	5.4E-09	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	9.7E-10
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	3.9E-09	7.8E-09	2.1E-09	2.9E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	5.2E-08
				Chromium	1.2E+01	mg/kg	1.4E-06	2.8E-06	7.6E-07	1.1E-06	mg/kg/day	5.0E+00	1.5E+00	1.5E+00	5.0E-01	1/(mg/kg-day)	1.3E-05
			Dermal	Benzo(a)anthracene	5.3E-02	mg/kg	2.3E-08	4.7E-08	5.1E-08	7.1E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	4.4E-07
				Benzo(a)pyrene	4.1E-02	mg/kg	1.8E-08	3.7E-08	4.0E-08	5.6E-08	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	3.4E-06
				Benzo(b)fluoranthene	6.0E-02	mg/kg	2.7E-08	5.3E-08	5.8E-08	8.1E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	5.0E-07
				Benzo(k)fluoranthene	3.9E-02	mg/kg	1.7E-08	3.4E-08	3.8E-08	5.3E-08	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	3.2E-08
				Chrysene	5.9E-02	mg/kg	2.6E-08	5.3E-08	5.7E-08	8.0E-08	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	4.9E-09
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	1.4E-08	2.8E-08	3.1E-08	4.3E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	2.7E-07
Soil	Soil	Soil* in Flight Line Areaa	Ingestion	Benzo(a)anthracene	2.3E-02	mg/kg	2.8E-09	5.6E-09	1.5E-09	2.1E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	3.7E-08
				Benzo(a)pyrene	2.9E-02	mg/kg	3.5E-09	7.0E-09	1.9E-09	2.6E-09	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	4.7E-07
				Benzo(b)fluoranthene	3.9E-02	mg/kg	4.8E-09	9.6E-09	2.6E-09	3.6E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	6.5E-08
				Benzo(k)fluoranthene	2.3E-02	mg/kg	2.8E-09	5.7E-09	1.5E-09	2.1E-09	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	3.8E-09
				Chrysene	2.9E-02	mg/kg	3.5E-09	7.1E-09	1.9E-09	2.6E-09	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	4.7E-10
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	2.9E-10	5.9E-10	1.6E-10	2.2E-10	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	3.9E-08
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	2.7E-09	5.5E-09	1.5E-09	2.0E-09	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	3.7E-08
			Dermal	Benzo(a)anthracene	2.3E-02	mg/kg	1.0E-08	2.0E-08	2.2E-08	3.1E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.9E-07
				Benzo(a)pyrene	2.9E-02	mg/kg	1.3E-08	2.5E-08	2.8E-08	3.9E-08	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	2.4E-06
				Benzo(b)fluoranthene	3.9E-02	mg/kg	1.8E-08	3.5E-08	3.8E-08	5.4E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	3.3E-07
				Benzo(k)fluoranthene	2.3E-02	mg/kg	1.0E-08	2.1E-08	2.2E-08	3.1E-08	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	1.9E-08
				Chrysene	2.9E-02	mg/kg	1.3E-08	2.6E-08	2.8E-08	3.9E-08	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	2.4E-09
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	1.1E-09	2.1E-09	2.3E-09	3.3E-09	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	2.0E-07
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	9.9E-09	2.0E-08	2.2E-08	3.0E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.9E-07
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Benzo(a)pyrene	2.0E-01	µg/L	2.4E-07	4.9E-07	5.2E-07	7.3E-07	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	4.5E-05
				Benzo(b)fluoranthene	3.8E-01	µg/L	4.6E-07	9.3E-07	9.9E-07	1.4E-06	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	8.6E-06
				Benzo(k)fluoranthene	3.1E-01	µg/L	3.8E-07	7.6E-07	8.1E-07	1.1E-06	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	7.0E-07
				Dibenz(a,h)anthracene	5.5E-01	µg/L	6.7E-07	1.3E-06	1.4E-06	2.0E-06	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	1.2E-04
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	5.5E-07	1.1E-06	1.2E-06	1.6E-06	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.0E-05
				Chromium	7.6E+01	µg/L	9.3E-05	1.9E-04	2.0E-04	2.8E-04	mg/kg/day	5.0E+00	1.5E+00	1.5E+00	5.0E-01	1/(mg/kg-day)	1.2E-03
			Dermal	Benzo(a)pyrene	2.0E-01	µg/L	2.9E-06	5.9E-06	7.5E-06	1.0E-05	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	5.8E-04
				Benzo(b)fluoranthene	3.8E-01	µg/L	5.7E-06	1.1E-05	1.4E-05	2.0E-05	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.1E-04
				Benzo(k)fluoranthene	3.1E-01	µg/L	4.3E-06	8.6E-06	1.1E-05	1.5E-05	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	8.6E-06
				Dibenz(a,h)anthracene	5.5E-01	µg/L	1.3E-07	2.7E-07	3.4E-07	4.8E-07	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	2.7E-05
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	3.1E-08	6.1E-08	7.8E-08	1.1E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	6.1E-07
				Chromium	7.6E+01	µg/L	4.0E-07	8.1E-07	8.9E-07	1.3E-06	mg/kg/day	1.3E-01	3.8E-02	3.8E-02	1.3E-02	1/(mg/kg-day)	1.3E-07

TABLE H 7.3.CTE SUPPLEMENT B

Calculation of DAevent—Adult Resident, Middle Castle-Hayne Groundwater Group 2

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Tetrachloroethene	2.4E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.25	1.1E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.3.CTE SUPPLEMENT C

Calculation of DAevent—Child Resident, Middle Castle-Hayne Groundwater Group 2

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Tetrachloroethene	2.4E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.33	1.2E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TAB;E H 7.3.CTE SUPPLEMENT D

Calculation of DAevent - Adult Resident, Middle Castle-Hayne Groundwater Group 3

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (mg/L)	Permeability Coefficient (KP) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DAevent (mg/cm^2-event)	Eq
Chloroform	3.8E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.25	2.5E-09	2
Benzo(a)pyrene	2.0E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	0.25	3.2E-07	2
Benzo(b)fluoranthene	3.8E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	0.25	6.1E-07	2
Benzo(k)fluoranthene[1]	3.1E-01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	0.25	4.7E-07	2
Dibenz(a,h)anthracene	5.5E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	6.0E-01	0.25	1.5E-08	2
Indeno(1,2,3-cd)pyrene	4.5E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	6.0E-01	0.25	3.3E-09	2
Chromium	7.6E+01	2.0E-03	NA	NA	NA	NA	0.25	3.8E-08	1

Inorganics: DA_{event} (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If $t_{event} < t^*$, then DA_{event} =

$2 \times FA \times Kp \times CW \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event})/\pi)) \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 2)

If $t_{event} > t^*$, then DA_{event} =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 ($t^* = 2.4\ t_{event}$) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.3.CTE SUPPLEMENT E

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular Weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
1,1-Dichloroethane	7.9E-01	9.9E+01	5.6E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	1.1E-01	8.8E-02	9.4E-04
2-Hexanone	1.4E+01	1.0E+02	9.3E-05	1.3E+03	1.3E+01	3.6E+00	4.9E+00	5.6E-01	4.6E-01	4.9E-03
Benzene	2.3E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	3.5E-01	2.9E-01	3.1E-03
Chloroform	6.9E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	8.3E-02	6.9E-02	7.4E-04
cis-1,2-Dichloroethene	3.6E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.8E+00	4.0E+00	4.3E-02
Dichlorodifluoromethane (Freon-12)	6.5E+00	1.2E+02	3.4E-01	1.2E+03	1.2E+01	1.2E+01	1.6E+01	8.2E-01	6.8E-01	7.3E-03
Ethylbenzene	9.2E-01	1.1E+02	7.9E-03	1.2E+03	1.3E+01	1.2E+01	1.7E+01	1.2E-01	1.0E-01	1.1E-03
Tetrachloroethene	1.9E+02	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.1E+01	1.7E+01	1.8E-01
Trichloroethene	4.5E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	5.4E+00	4.5E+00	4.8E-02
Vinyl chloride	1.0E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	1.7E+00	1.4E+00	1.5E-02
Naphthalene	1.9E-01	1.3E+02	4.4E-04	1.1E+03	1.2E+01	7.5E+00	1.0E+01	1.5E-02	1.3E-02	1.4E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	15
Dt - total duration in shower room	min	40
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$

TABLE H 7.3.CTE SUPPLEMENT E

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$	
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$	
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))	
Equation 6:	S =	(Cwd * FR / SV)	
Equation 7:	Ca =	If t>Ds	[(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.3.CTE SUPPLEMENT F

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 2

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Tetrachloroethene	2.4E+00	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.6E-01	2.2E-01	2.3E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	15
Dt - total duration in shower room	min	40
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	3000 * (18 / MW)$^{0.5}$
Equation 2:	Kl(VOC) =	20 * (44 / MW)$^{0.5}$
Equation 3:	KL =	((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))$^{-1}$
Equation 4:	Kal =	(KL * (((Tl * Us) / (Ts * Ul))$^{-0.5}$))
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.3.CTE SUPLLEMENT G

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 2

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Tetrachloroethene	2.4E+00	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.6E-01	2.2E-01	2.6E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	20
Dt - total duration in shower room	min	30
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.3.CTE SUPPLEMENT H

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 3

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Chloroform	3.8E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	4.6E-02	3.8E-02	4.1E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	15
Dt - total duration in shower room	min	40
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.3.CTE SUPPLEMENT I

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Upper Aquifer—Plume 1 Groundwater Air Group 4

Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	1.8E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	2.8E-01	2.3E-01	2.5E-03
cis-1,2-Dichloroethene	1.6E+02	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.1E+01	1.8E+01	1.9E-01
trans-1,2-Dichloroethene	5.2E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	6.9E-01	5.8E-01	6.1E-03
Trichloroethene	1.6E+02	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	1.9E+01	1.6E+01	1.7E-01
Vinyl chloride	2.3E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	3.9E+00	3.2E+00	3.4E-02

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) - gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) - liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL - overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal - adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl - Calibration temp. of water	K (20C +273)	293
Ts - Shower water temperature	k (45C)	318
Us - water viscosity at Ts	centipoise	0.596
Ul - water viscosity at Tl	cp	1.002
Cwd - conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt - shower droplet drop time	sec	0.5
d - shower droplet diameter	mm	1
FR - shower water flow rate	l/min	10
SV - shower room air volume	m^3	12
S - indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds - duration of shower	min	15
Dt - total duration in shower room	min	40
R - air exchange rate	min^{-1}	0.0083
Ca - indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.4.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	5.3E-02	mg/kg	2.9E-09	mg/kg/day	7.3E-01	mg/kg/day	2.1E-09	2.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	2.3E-09	mg/kg/day	7.3E+00	mg/kg/day	1.7E-08	1.8E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	3.3E-09	mg/kg/day	7.3E-01	mg/kg/day	2.4E-09	2.6E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	2.1E-09	mg/kg/day	7.3E-02	mg/kg/day	1.6E-10	1.7E-08	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	3.3E-09	mg/kg/day	7.3E-03	mg/kg/day	2.4E-11	2.5E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	1.8E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.4E-08	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	4.2E-04	mg/kg/day	NA		NA	3.3E-03	mg/kg/day	1.0E+00	mg/kg/day	3.3E-03
				Arsenic	1.2E+00	mg/kg	6.7E-08	mg/kg/day	1.5E+00	mg/kg/day	1.0E-07	5.2E-07	mg/kg/day	3.0E-04	mg/kg/day	1.7E-03
				Chromium	1.2E+01	mg/kg	6.4E-07	mg/kg/day	5.0E-01	mg/kg/day	3.2E-07	5.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.7E-03
				Cobalt	1.2E+00	mg/kg	6.9E-08	mg/kg/day	NA		NA	5.3E-07	mg/kg/day	3.0E-04	mg/kg/day	1.8E-03
				Iron	3.2E+03	mg/kg	1.8E-04	mg/kg/day	NA		NA	1.4E-03	mg/kg/day	7.0E-01	mg/kg/day	2.0E-03
										Exp. Route Total	4.4E-07					1.0E-02
			Dermal Absorption[1]	Benzo(a)anthracene	5.3E-02	mg/kg	5.0E-10	mg/kg/day	7.3E-01	mg/kg/day	3.6E-10	3.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	4.1E-02	mg/kg	3.9E-10	mg/kg/day	7.3E+00	mg/kg/day	2.9E-09	2.3E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	6.0E-02	mg/kg	5.6E-10	mg/kg/day	7.3E-01	mg/kg/day	4.1E-10	3.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.9E-02	mg/kg	3.7E-10	mg/kg/day	7.3E-02	mg/kg/day	2.7E-11	2.2E-08	mg/kg/day	NA		NA
				Chrysene	5.9E-02	mg/kg	5.6E-10	mg/kg/day	7.3E-03	mg/kg/day	4.1E-12	3.4E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	3.2E-02	mg/kg	3.0E-10	mg/kg/day	7.3E-01	mg/kg/day	2.2E-10	1.8E-08	mg/kg/day	NA		NA
				Aluminum	7.7E+03	mg/kg	5.6E-07	mg/kg/day	NA		NA	4.3E-03	mg/kg/day	1.0E+00	mg/kg/day	4.3E-03
				Arsenic	1.2E+00	mg/kg	2.7E-09	mg/kg/day	1.5E+00	mg/kg/day	4.0E-09	6.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.3E-03
				Chromium	1.2E+01	mg/kg	8.5E-10	mg/kg/day	1.3E-02	mg/kg/day	1.1E-11	6.6E-06	mg/kg/day	7.5E-05	mg/kg/day	8.8E-02
				Cobalt	1.2E+00	mg/kg	9.0E-11	mg/kg/day	NA		NA	7.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.3E-03
				Iron	3.2E+03	mg/kg	2.4E-07	mg/kg/day	NA		NA	1.8E-03	mg/kg/day	7.0E-01	mg/kg/day	2.6E-03
										Exp. Route Total	7.9E-09					9.9E-02
										Exposure Medium Total	4.5E-07					1.1E-01
										Soil* in Industrial Area Total	4.5E-07					1.1E-01

TABLE H 7.4.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Flght Line Area	Ingestion	Benzo(a)anthracene	2.3E-02	mg/kg	1.3E-09	mg/kg/day	7.3E-01	mg/kg/day	9.2E-10	9.8E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.9E-02	mg/kg	1.6E-09	mg/kg/day	7.3E+00	mg/kg/day	1.2E-08	1.2E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.9E-02	mg/kg	2.2E-09	mg/kg/day	7.3E-01	mg/kg/day	1.6E-09	1.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E-02	mg/kg	1.3E-09	mg/kg/day	7.3E-02	mg/kg/day	9.3E-11	9.9E-09	mg/kg/day	NA		NA
				Chrysene	2.9E-02	mg/kg	1.6E-09	mg/kg/day	7.3E-03	mg/kg/day	1.2E-11	1.2E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	1.3E-10	mg/kg/day	7.3E+00	mg/kg/day	9.7E-10	1.0E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	1.2E-09	mg/kg/day	7.3E-01		9.0E-10	9.6E-09	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	1.5E+04	mg/kg	8.4E-04	mg/kg/day	NA	mg/kg/day	NA	6.5E-03	mg/kg/day	1.0E+00	mg/kg/day	6.5E-03
				Arsenic	2.9E+00	mg/kg	1.6E-07	mg/kg/day	1.5E+00	mg/kg/day	2.4E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.1E-03
				Chromium	1.8E+01	mg/kg	9.8E-07	mg/kg/day	5.0E-01		4.9E-07	7.6E-06	mg/kg/day	3.0E-03	mg/kg/day	2.5E-03
				Cobalt	1.2E+00	mg/kg	6.9E-08	mg/kg/day	NA		NA	5.3E-07	mg/kg/day	3.0E-04	mg/kg/day	1.8E-03
				Iron	6.5E+03	mg/kg	3.6E-04	mg/kg/day	NA		NA	2.8E-03	mg/kg/day	7.0E-01	mg/kg/day	4.0E-03
				Vanadium	2.8E+01	mg/kg	1.5E-06	mg/kg/day	NA		NA	1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.4E-03
										Exp. Route Total	7.4E-07					2.1E-02
			Dermal Absorption[1]	Benzo(a)anthracene	2.3E-02	mg/kg	2.2E-10	mg/kg/day	7.3E-01	mg/kg/day	1.6E-10	1.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	2.9E-02	mg/kg	2.7E-10	mg/kg/day	7.3E+00	mg/kg/day	2.0E-09	1.6E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.9E-02	mg/kg	3.7E-10	mg/kg/day	7.3E-01	mg/kg/day	2.7E-10	2.2E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	2.3E-02	mg/kg	2.2E-10	mg/kg/day	7.3E-02	mg/kg/day	1.6E-11	1.3E-08	mg/kg/day	NA		NA
				Chrysene	2.9E-02	mg/kg	2.7E-10	mg/kg/day	7.3E-03	mg/kg/day	2.0E-12	1.6E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	2.4E-03	mg/kg	2.3E-11	mg/kg/day	7.3E+00	mg/kg/day	1.7E-10	1.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.2E-02	mg/kg	1.6E-12	mg/kg/day	7.3E-01		1.2E-12	1.3E-08	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	1.5E+04	mg/kg	3.3E-05	mg/kg/day	NA	mg/kg/day	NA	8.6E-03	mg/kg/day	1.0E+00	mg/kg/day	8.6E-03
				Arsenic	2.9E+00	mg/kg	2.1E-10	mg/kg/day	1.5E+00	mg/kg/day	3.1E-10	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.4E-03
				Chromium	1.8E+01	mg/kg	1.3E-09	mg/kg/day	1.3E-02		1.6E-11	1.0E-05	mg/kg/day	7.5E-05	mg/kg/day	1.3E-01
				Cobalt	1.2E+00	mg/kg	9.1E-11	mg/kg/day	NA		NA	7.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.4E-03
				Iron	6.5E+03	mg/kg	4.7E-07	mg/kg/day	NA		NA	3.7E-03	mg/kg/day	7.0E-01	mg/kg/day	5.2E-03
				Vanadium	2.8E+01	mg/kg	2.0E-09	mg/kg/day	NA		NA	1.6E-05	mg/kg/day	1.3E-04	mg/kg/day	1.2E-01
										Exp. Route Total	2.9E-09					2.8E-01
										Exposure Medium Total	7.5E-07					3.0E-01
										Soil* in Flight Line Area Total	7.5E-07					3.0E-01

TABLE H 7.4.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	8.7E-07	mg/kg/day	5.7E-03	mg/kg/day	5.0E-09	6.8E-06	mg/kg/day	2.0E-01	mg/kg/day	3.4E-05
				2-Hexanone	1.4E+01	µg/L	1.5E-05	mg/kg/day	NA	mg/kg/day	NA	1.2E-04	mg/kg/day	5.0E-03	mg/kg/day	2.4E-02
				Benzene	2.3E+00	µg/L	2.5E-06	mg/kg/day	5.5E-02	mg/kg/day	1.4E-07	1.9E-05	mg/kg/day	4.0E-03	mg/kg/day	4.9E-03
				Chloroform	6.9E-01	µg/L	7.6E-07	mg/kg/day	3.1E-02	mg/kg/day	2.4E-08	5.9E-06	mg/kg/day	1.0E-02	mg/kg/day	5.9E-04
				cis-1,2-Dichloroethene	3.6E+01	µg/L	4.0E-05	mg/kg/day	NA		NA	3.1E-04	mg/kg/day	1.0E-02	mg/kg/day	3.1E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	7.1E-06	mg/kg/day	NA		NA	5.5E-05	mg/kg/day	2.0E-01	mg/kg/day	2.8E-04
				Ethylbenzene	9.2E-01	µg/L	1.0E-06	mg/kg/day	1.1E-02	mg/kg/day	1.1E-08	7.9E-06	mg/kg/day	1.0E-01	mg/kg/day	7.9E-05
				Tetrachloroethene	1.9E+02	µg/L	2.1E-04	mg/kg/day	5.4E-01	mg/kg/day	1.1E-04	1.6E-03	mg/kg/day	1.0E-02	mg/kg/day	1.6E-01
				Trichloroethene	4.5E+01	µg/L	5.0E-05	mg/kg/day	5.9E-03	mg/kg/day	2.9E-07	3.9E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	1.1E-05	mg/kg/day	7.2E-01	mg/kg/day	7.9E-06	8.5E-05	mg/kg/day	3.0E-03	mg/kg/day	2.8E-02
				Naphthalene	1.9E-01	µg/L	2.1E-07	mg/kg/day	NA		NA	1.6E-06	mg/kg/day	2.0E-02	mg/kg/day	8.1E-05
				Antimony	3.4E+00	µg/L	3.7E-06	mg/kg/day	NA		NA	2.9E-05	mg/kg/day	4.0E-04	mg/kg/day	7.3E-02
				Iron	5.3E+03	µg/L	5.8E-03	mg/kg/day	NA		NA	4.5E-02	mg/kg/day	7.0E-01	mg/kg/day	6.5E-02
										Exp. Route Total	1.2E-04					3.9E-01
										Groundwater Group 1 Total	1.2E-04					3.9E-01
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	4.2E-07	mg/kg/day	3.1E-02	mg/kg/day	1.3E-08	3.3E-06	mg/kg/day	1.0E-02	mg/kg/day	3.3E-04
				Benzo(a)pyrene	2.0E-01	µg/L	2.2E-07	mg/kg/day	7.3E+00	mg/kg/day	1.6E-06	1.7E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L	4.2E-07	mg/kg/day	7.3E-01	mg/kg/day	3.1E-07	3.3E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L	3.4E-07	mg/kg/day	7.3E-02	mg/kg/day	2.5E-08	2.7E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L	6.1E-07	mg/kg/day	7.3E+00	mg/kg/day	4.4E-06	4.7E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	5.0E-07	mg/kg/day	7.3E-01	mg/kg/day	3.6E-07	3.9E-06	mg/kg/day	NA		NA
				Chromium	7.6E+01	µg/L	8.4E-05	mg/kg/day	5.0E-01	mg/kg/day	4.2E-05	6.5E-04	mg/kg/day	3.0E-03	mg/kg/day	2.2E-01
										Exp. Route Total	4.9E-05					2.2E-01
										Groundwater Group 3 Total	4.9E-05					2.2E-01

TABLE H 7.4.CTE
Calculation of Chemical Cancer Risks and Non-Cancer Hazards—Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Castle-Hayne Aquifer - Plume 1 Tap Water	Ingestion	Benzene	1.8E+00	µg/L	2.0E-06	mg/kg/day	5.5E-02	mg/kg/day	1.1E-07	1.5E-05	mg/kg/day	4.0E-03	mg/kg/day	3.9E-03
				cis-1,2-Dichloroethene	1.6E+02	µg/L	1.8E-04	mg/kg/day	NA		NA	1.4E-03	mg/kg/day	1.0E-02	mg/kg/day	1.4E-01
				trans-1,2-Dichloroethene	5.2E+00	µg/L	5.7E-06	mg/kg/day	NA		NA	4.4E-05	mg/kg/day	2.0E-02	mg/kg/day	2.2E-03
				Trichloroethene	1.6E+02	µg/L	1.7E-04	mg/kg/day	5.9E-03	mg/kg/day	1.0E-06	1.3E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	2.5E-05	mg/kg/day	7.2E-01	mg/kg/day	1.8E-05	1.9E-04	mg/kg/day	3.0E-03	mg/kg/day	6.4E-02
										Exp. Route Total	1.9E-05					2.1E-01
										Groundwater Group 4 Total	1.9E-05					2.1E-01
										Total of Receptor Risks Across All Media	1.2E-04	Total of Receptor Hazards Across All Media				8.0E-01

Notes:
1. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	NA		NA		NA	1.3E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	NA		NA		NA	1.0E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	NA		NA		NA	1.4E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	NA		NA		NA	9.8E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	NA		NA		NA	1.5E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	NA		NA		NA	7.7E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	NA		NA		NA	1.4E-02	mg/kg/day	1.0E+00	mg/kg/day	1.4E-02
				Arsenic	1.5E+00	mg/kg	NA		NA		NA	2.0E-06	mg/kg/day	3.0E-04	mg/kg/day	6.7E-03
				Chromium	1.5E+01	mg/kg	NA		NA		NA	2.0E-05	mg/kg/day	3.0E-03	mg/kg/day	6.8E-03
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	2.1E-06	mg/kg/day	3.0E-04	mg/kg/day	6.9E-03
				Iron	4.0E+03	mg/kg	NA		NA		NA	5.4E-03	mg/kg/day	7.0E-01	mg/kg/day	7.8E-03
				Exp. Route Total							0.0E+00					4.2E-02
			Dermal Absorption[1]	Benzo(a)anthracene	9.5E-02	mg/kg	NA		NA		NA	6.8E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	NA		NA		NA	5.2E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	NA		NA		NA	7.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	NA		NA		NA	5.1E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	NA		NA		NA	7.5E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	NA		NA		NA	4.0E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	NA		NA		NA	5.7E-05	mg/kg/day	1.0E+00	mg/kg/day	5.7E-05
				Arsenic	1.5E+00	mg/kg	NA		NA		NA	2.4E-07	mg/kg/day	3.0E-04	mg/kg/day	8.1E-04
				Chromium	1.5E+01	mg/kg	NA		NA		NA	8.1E-08	mg/kg/day	7.5E-05	mg/kg/day	1.1E-03
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	8.3E-09	mg/kg/day	3.0E-04	mg/kg/day	2.8E-05
				Iron	4.0E+03	mg/kg	NA		NA		NA	2.2E-05	mg/kg/day	7.0E-01	mg/kg/day	3.1E-05
				Exp. Route Total							0.0E+00					2.0E-03
				Exposure Medium Total							0.0E+00					4.4E-02
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	NA		NA		NA	1.0E-08	mg/kg/day	1.0E-04	mg/m^3	1.0E-04
				Exp. Route Total							0.0E+00					1.0E-04
				Exposure Medium Total							0.0E+00					1.0E-04
				Soil* in Industrial Area Total							0.0E+00					4.5E-02

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	NA		NA		NA	6.6E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	NA		NA		NA	8.4E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	NA		NA		NA	1.0E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	NA		NA		NA	7.4E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	NA		NA		NA	7.9E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	NA		NA		NA	4.2E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	NA		NA		NA	6.0E-08	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	NA		NA		NA	2.8E-02	mg/kg/day	1.0E+00	mg/kg/day	2.8E-02
				Arsenic	1.1E+01	mg/kg	NA		NA		NA	1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.1E-02
				Chromium	3.4E+01	mg/kg	NA		NA		NA	4.7E-05	mg/kg/day	3.0E-03	mg/kg/day	1.6E-02
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	2.1E-06	mg/kg/day	3.0E-04	mg/kg/day	6.9E-03
				Iron	1.4E+04	mg/kg	NA		NA		NA	1.9E-02	mg/kg/day	7.0E-01	mg/kg/day	2.7E-02
				Vanadium	5.9E+01	mg/kg	NA		NA		NA	8.1E-05	mg/kg/day	5.0E-03	mg/kg/day	1.6E-02
										Exp. Route Total	0.0E+00					1.5E-01
			Dermal Absorption[1]	Benzo(a)anthracene	4.8E-02	mg/kg	NA		NA		NA	3.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	NA		NA		NA	4.3E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	NA		NA		NA	5.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	NA		NA		NA	3.8E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	NA		NA		NA	4.1E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	NA		NA		NA	2.2E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	NA		NA		NA	3.1E-08	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	NA		NA		NA	1.1E-04	mg/kg/day	1.0E+00	mg/kg/day	1.1E-04
				Arsenic	1.1E+01	mg/kg	NA		NA		NA	1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.1E-03
				Chromium	3.4E+01	mg/kg	NA		NA		NA	1.9E-07	mg/kg/day	7.5E-05	mg/kg/day	2.5E-03
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	8.2E-09	mg/kg/day	3.0E-04	mg/kg/day	2.7E-05
				Iron	1.4E+04	mg/kg	NA		NA		NA	7.6E-05	mg/kg/day	7.0E-01	mg/kg/day	1.1E-04
				Vanadium	5.9E+01	mg/kg	NA		NA		NA	3.2E-07	mg/kg/day	1.3E-04	mg/kg/day	2.5E-03
										Exp. Route Total	0.0E+00					1.1E-02
										Exposure Point Total	0.0E+00					1.6E-01
										Exposure Medium Total	0.0E+00					1.6E-01
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	NA		NA		NA	2.4E-08	mg/kg/day	1.0E-04	mg/m^3	2.4E-04
										Exp. Route Total	0.0E+00					2.4E-04
										Exposure Medium Total	0.0E+00					2.4E-04
										Soil* in Flight Line Area Total	0.0E+00					1.6E-01

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	NA		NA		NA	2.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.1E-04
				2-Hexanone	1.4E+01	µg/L	NA		NA		NA	3.8E-04	mg/kg/day	5.0E-03	mg/kg/day	7.7E-02
				Benzene	2.3E+00	µg/L	NA		NA		NA	6.2E-05	mg/kg/day	4.0E-03	mg/kg/day	1.6E-02
				Chloroform	6.9E-01	µg/L	NA		NA		NA	1.9E-05	mg/kg/day	1.0E-02	mg/kg/day	1.9E-03
				cis-1,2-Dichloroethene	3.6E+01	µg/L	NA		NA		NA	9.9E-04	mg/kg/day	1.0E-02	mg/kg/day	9.9E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	NA		NA		NA	1.8E-04	mg/kg/day	2.0E-01	mg/kg/day	8.9E-04
				Ethylbenzene	9.2E-01	µg/L	NA		NA		NA	2.5E-05	mg/kg/day	1.0E-01	mg/kg/day	2.5E-04
				Tetrachloroethene	1.9E+02	µg/L	NA		NA		NA	5.2E-03	mg/kg/day	1.0E-02	mg/kg/day	5.2E-01
				Trichloroethene	4.5E+01	µg/L	NA		NA		NA	1.2E-03	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	NA		NA		NA	2.7E-04	mg/kg/day	3.0E-03	mg/kg/day	9.1E-02
				Naphthalene	1.9E-01	µg/L	NA		NA		NA	5.2E-06	mg/kg/day	2.0E-02	mg/kg/day	2.6E-04
				Antimony	3.4E+00	µg/L	NA		NA		NA	9.3E-05	mg/kg/day	4.0E-04	mg/kg/day	2.3E-01
				Iron	5.3E+03	µg/L	NA		NA		NA	1.5E-01	mg/kg/day	7.0E-01	mg/kg/day	2.1E-01
										Exp. Route Total	0.0E+00					1.2E+00
			Dermal Absorption[2]	1,1-Dichloroethane	7.9E-01	mg/kg	NA		NA		NA	1.7E-06	mg/kg/day	2.0E-01	mg/kg/day	8.6E-06
				2-Hexanone	1.4E+01	mg/kg	NA		NA		NA	1.6E-05	mg/kg/day	5.0E-03	mg/kg/day	3.2E-03
				Benzene	2.3E+00	mg/kg	NA		NA		NA	9.4E-06	mg/kg/day	4.0E-03	mg/kg/day	2.4E-03
				Chloroform	6.9E-01	mg/kg	NA		NA		NA	1.7E-06	mg/kg/day	1.0E-02	mg/kg/day	1.7E-04
				cis-1,2-Dichloroethene	3.6E+01	mg/kg	NA		NA		NA	8.7E-05	mg/kg/day	1.0E-02	mg/kg/day	8.7E-03
				Dichlorodifluoromethane (Freon-12)	6.5E+00	mg/kg	NA		NA		NA	2.1E-05	mg/kg/day	2.0E-01	mg/kg/day	1.1E-04
				Ethylbenzene	9.2E-01	mg/kg	NA		NA		NA	1.5E-05	mg/kg/day	1.0E-01	mg/kg/day	1.5E-04
				Tetrachloroethene	1.9E+02	mg/kg	NA		NA		NA	3.1E-03	mg/kg/day	1.0E-02	mg/kg/day	3.1E-01
				Trichloroethene	4.5E+01	mg/kg	NA		NA		NA	2.1E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	mg/kg	NA		NA		NA	1.5E-05	mg/kg/day	3.0E-03	mg/kg/day	4.8E-03
				Naphthalene	1.9E-01	mg/kg	NA		NA		NA	3.4E-06	mg/kg/day	2.0E-02	mg/kg/day	1.7E-04
				Antimony	3.4E+00	mg/kg	NA		NA		NA	4.9E-07	mg/kg/day	6.0E-05	mg/kg/day	8.1E-03
				Iron	5.3E+03	mg/kg	NA		NA		NA	7.6E-04	mg/kg/day	7.0E-01	mg/kg/day	1.1E-03
										Exp. Route Total	0.0E+00					3.4E-01
										Exposure Point Total	0.0E+00					1.6E+00
										Exposure Medium Total	0.0E+00					1.6E+00

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
	Groundwater Air Group 1	Surficial Aquifer	Inhalation	1,1-Dichloroethane	1.8E-03	mg/m^3	NA		NA		NA	4.2E-05	mg/m^3	NA		NA
		Water Vapors at Showerhead		2-Hexanone	9.6E-03	mg/m^3	NA		NA		NA	2.2E-04	mg/m^3	3.0E-02	mg/m^3	7.4E-03
				Benzene	6.0E-03	mg/m^3	NA		NA		NA	1.4E-04	mg/m^3	3.0E-02	mg/m^3	4.7E-03
				Chloroform	1.4E-03	mg/m^3	NA		NA		NA	3.3E-05	mg/m^3	9.8E-02	mg/m^3	3.4E-04
				cis-1,2-Dichloroethene	8.2E-02	mg/m^3	NA		NA		NA	1.9E-03	mg/m^3	NA		NA
				Dichlorodifluoromethane (Freon-12)	1.4E-02	mg/m^3	NA		NA		NA	3.3E-04	mg/m^3	2.0E-01	mg/m^3	1.6E-03
				Ethylbenzene	2.1E-03	mg/m^3	NA		NA		NA	4.8E-05	mg/m^3	1.0E+00	mg/m^3	4.7E-05
				Tetrachloroethene	3.5E-01	mg/m^3	NA		NA		NA	8.2E-03	mg/m^3	2.7E-01	mg/m^3	3.0E-02
				Trichloroethene	9.3E-02	mg/m^3	NA		NA		NA	2.2E-03	mg/m^3	NA		NA
				Vinyl chloride	2.9E-02	mg/m^3	NA		NA		NA	6.8E-04	mg/m^3	1.0E-01	mg/m^3	6.8E-03
				Naphthalene	2.6E-04	mg/m^3	NA		NA		NA	6.1E-06	mg/m^3	3.0E-03	mg/m^3	2.0E-03
										Exp. Route Total	0.0E+00					5.3E-02
										Exposure Medium Total	0.0E+00					5.3E-02
										Groundwater Group 1 Total	0.0E+00					1.6E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Tetrachloroethene	2.4E+00	µg/L	NA		NA		NA	6.6E-05	mg/kg/day	1.0E-02	mg/kg/day	6.6E-03
										Exp. Route Total	0.0E+00					6.6E-03
			Dermal Absorption[2]	Tetrachloroethene	2.4E+00	mg/kg	NA		NA		NA	4.0E-05	mg/kg/day	1.0E-02	mg/kg/day	4.0E-03
										Exp. Route Total	0.0E+00					4.0E-03
										Exposure Point Total	0.0E+00					1.1E-02
										Exposure Medium Total	0.0E+00					1.1E-02
	Groundwater Air Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Tetrachloroethene	4.5E-03	mg/m^3	NA		NA		NA	1.0E-04	mg/m^3	2.7E-01	mg/m^3	3.8E-04
										Exp. Route Total	0.0E+00					3.8E-04
										Exposure Medium Total	0.0E+00					3.8E-04
										Groundwater Group 2 Total	0.0E+00					1.1E-02

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	NA		NA		NA	1.0E-05	mg/kg/day	1.0E-02	mg/kg/day	1.0E-03
				Benzo(a)pyrene	2.0E-01	µg/L	NA		NA		NA	5.5E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L	NA		NA		NA	1.0E-05	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L	NA		NA		NA	8.5E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L	NA		NA		NA	1.5E-05	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	NA		NA		NA	1.2E-05	mg/kg/day	NA		NA
				Chromium	7.6E+01	µg/L	NA		NA		NA	2.1E-03	mg/kg/day	3.0E-03	mg/kg/day	6.9E-01
										Exp. Route Total	0.0E+00					7.0E-01
			Dermal Absorption[2]	Chloroform	3.8E-01	mg/kg	NA		NA		NA	9.5E-07	mg/kg/day	1.0E-02	mg/kg/day	9.5E-05
				Benzo(a)pyrene	2.0E-01	mg/kg	NA		NA		NA	1.2E-04	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	mg/kg	NA		NA		NA	2.3E-04	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	mg/kg	NA		NA		NA	1.7E-04	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	mg/kg	NA		NA		NA	5.5E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	mg/kg	NA		NA		NA	1.2E-06	mg/kg/day	NA		NA
				Chromium	7.6E+01	mg/kg	NA		NA		NA	2.2E-05	mg/kg/day	7.5E-05	mg/kg/day	2.9E-01
																2.9E-01
										Exp. Route Total	0.0E+00					2.9E-01
										Exposure Point Total	0.0E+00					9.9E-01
										Exposure Medium Total	0.0E+00					9.9E-01
	Groundwater Air Group 3	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Chloroform	7.9E-04	mg/m^3	NA		NA		NA	1.8E-05	mg/m^3	9.8E-02	mg/m^3	1.9E-04
										Exp. Route Total	0.0E+00					1.9E-04
										Exposure Medium Total	0.0E+00					1.9E-04
										Groundwater Group 3 Total	0.0E+00					9.9E-01

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Aquifer	Ingestion	Benzene	1.8E+00	µg/L	NA		NA		NA	4.9E-05	mg/kg/day	4.0E-03	mg/kg/day	1.2E-02
		Plume 1		cis-1,2-Dichloroethene	1.6E+02	µg/L	NA		NA		NA	4.4E-03	mg/kg/day	1.0E-02	mg/kg/day	4.4E-01
		Tap Water		trans-1,2-Dichloroethene	5.2E+00	µg/L	NA		NA		NA	1.4E-04	mg/kg/day	2.0E-02	mg/kg/day	7.1E-03
				Trichloroethene	1.6E+02	µg/L	NA		NA		NA	4.3E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	NA		NA		NA	6.2E-04	mg/kg/day	3.0E-03	mg/kg/day	2.1E-01
										Exp. Route Total	0.0E+00					6.7E-01
			Dermal Absorption[2]	Benzene	1.8E+00	mg/kg	NA		NA		NA	4.0E-05	mg/kg/day	4.0E-03	mg/kg/day	9.9E-03
				cis-1,2-Dichloroethene	1.6E+02	mg/kg	NA		NA		NA	3.9E-04	mg/kg/day	1.0E-02	mg/kg/day	3.9E-02
				trans-1,2-Dichloroethene	5.2E+00	mg/kg	NA		NA		NA	7.4E-05	mg/kg/day	2.0E-02	mg/kg/day	3.7E-03
				Trichloroethene	1.6E+02	mg/kg	NA		NA		NA	4.9E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	mg/kg	NA		NA		NA	1.5E-04	mg/kg/day	3.0E-03	mg/kg/day	5.0E-02
										Exp. Route Total	0.0E+00					1.0E-01
										Exposure Point Total	0.0E+00					7.7E-01
										Exposure Medium Total	0.0E+00					7.7E-01
	Groundwater Air Group 4	Upper Aquifer	Inhalation	Benzene	4.8E-03	mg/m^3	NA		NA		NA	1.1E-04	mg/m^3	3.0E-02	mg/m^3	3.7E-03
		Plume 1 - Water Vapors at Showerhead		cis-1,2-Dichloroethene	3.7E-01	mg/m^3	NA		NA		NA	8.5E-03	mg/m^3	NA		NA
				trans-1,2-Dichloroethene	1.2E-02	mg/m^3	NA		NA		NA	2.8E-04	mg/m^3	6.0E-02	mg/m^3	4.6E-03
				Trichloroethene	3.2E-01	mg/m^3	NA		NA		NA	7.5E-03	mg/m^3	NA		NA
				Vinyl chloride	6.6E-02	mg/m^3	NA		NA		NA	1.5E-03	mg/m^3	1.0E-01	mg/m^3	1.5E-02
										Exp. Route Total	0.0E+00					2.4E-02
										Exposure Medium Total	0.0E+00					2.4E-02
										Groundwater Group 4 Total	0.0E+00					7.9E-01

TABLE H 7.7.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 5	Upper Aquifer	Ingestion	Benzene	4.5E-01	µg/L	NA		NA		NA	1.2E-05	mg/kg/day	4.0E-03	mg/kg/day	3.1E-03
		Plume 2		cis-1,2-Dichloroethene	3.0E+01	µg/L	NA		NA		NA	8.3E-04	mg/kg/day	1.0E-02	mg/kg/day	8.3E-02
		Tap Water		Tetrachloroethene	2.8E-01	µg/L	NA		NA		NA	7.7E-06	mg/kg/day	1.0E-02	mg/kg/day	7.7E-04
				trans-1,2-Dichloroethene	2.1E+00	µg/L	NA		NA		NA	5.7E-05	mg/kg/day	2.0E-02	mg/kg/day	2.8E-03
				Trichloroethene	1.4E+02	µg/L	NA		NA		NA	3.8E-03	mg/kg/day	NA		NA
				Vinyl chloride	3.8E-01	µg/L	NA		NA		NA	1.0E-05	mg/kg/day	3.0E-03	mg/kg/day	3.5E-03
										Exp. Route Total	0.0E+00					9.4E-02
			Dermal Absorption[2]	Benzene	4.5E-01	mg/kg	NA		NA		NA	1.9E-06	mg/kg/day	4.0E-03	mg/kg/day	4.7E-04
				cis-1,2-Dichloroethene	3.0E+01	mg/kg	NA		NA		NA	7.3E-05	mg/kg/day	1.0E-02	mg/kg/day	7.3E-03
				Tetrachloroethene	2.8E-01	mg/kg	NA		NA		NA	4.6E-06	mg/kg/day	1.0E-02	mg/kg/day	4.6E-04
				trans-1,2-Dichloroethene	2.1E+00	mg/kg	NA		NA		NA	5.0E-06	mg/kg/day	2.0E-02	mg/kg/day	2.5E-04
				Trichloroethene	1.4E+02	mg/kg	NA		NA		NA	6.4E-04	mg/kg/day	NA		NA
				Vinyl chloride	3.8E-01	mg/kg	NA		NA		NA	5.5E-07	mg/kg/day	3.0E-03	mg/kg/day	1.8E-04
										Exp. Route Total	0.0E+00					8.7E-03
										Exposure Point Total	0.0E+00					1.0E-01
										Exposure Medium Total	0.0E+00					1.0E-01
	Groundwater Air Group 5	Upper Aquifer	Inhalation	Benzene	1.2E-03	mg/m^3	NA		NA		NA	2.8E-05	mg/m^3	3.0E-02	mg/m^3	9.3E-04
		Plume 2 - Water Vapors at Showerhead		cis-1,2-Dichloroethene	7.0E-02	mg/m^3	NA		NA		NA	1.6E-03	mg/m^3	NA		NA
				Tetrachloroethene	5.2E-04	mg/m^3	NA		NA		NA	1.2E-05	mg/m^3	2.7E-01	mg/m^3	4.5E-05
				trans-1,2-Dichloroethene	4.7E-03	mg/m^3	NA		NA		NA	1.1E-04	mg/m^3	6.0E-02	mg/m^3	1.8E-03
				Trichloroethene	5.5E-02	mg/m^3	NA		NA		NA	1.3E-03	mg/m^3	NA		NA
				Vinyl chloride	1.1E-03	mg/m^3	NA		NA		NA	2.6E-05	mg/m^3	1.0E-01		2.6E-04
										Exp. Route Total	0.0E+00					3.1E-03
										Exposure Medium Total	0.0E+00					3.1E-03
										Groundwater Group 5 Total	0.0E+00					1.1E-01
										Total of Receptor Risks Across All Media	0.0E+00	Total of Receptor Hazards Across All Media				1.8E+00

Notes:

* Soil = combined surface and subsurface soil

1. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

2. DAevent for dermal exposure to groundwater calculated on Tables 7.7.RME Supplements A-E.

3. Inhalation exposures calculated on Tables H 7.7.RME Supplement F-J.

TABLE H 7.7.RME SUPPLEMENT A

Calculation of DAevent – Adult Resident, Surficial Groundwater Group 1

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
1,1-Dichloroethane	7.9E-01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	0.58	6.9E-09	2
2-Hexanone[1]	1.4E+01	3.6E-03	1.4E-02	3.8E-01	9.2E-01	1.0E+00	0.58	6.5E-08	2
Benzene	2.3E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.58	3.8E-08	2
Chloroform	6.9E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.58	7.0E-09	2
cis-1,2-Dichloroethene[1]	3.6E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.58	3.5E-07	2
Dichlorodifluoromethane (Freon-12)	6.5E+00	9.0E-03	3.8E-02	5.1E-01	1.2E+00	1.0E+00	0.58	8.7E-08	2
Ethylbenzene	9.2E-01	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	0.58	6.2E-08	2
Tetrachloroethene	1.9E+02	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.58	1.3E-05	2
Trichloroethene	4.5E+01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.58	8.5E-07	2
Vinyl chloride	1.0E+01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	0.58	5.9E-08	3
Naphthalene	1.9E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	0.58	1.4E-08	2
Antimony	3.4E+00	1.0E-03	NA	NA	NA	NA	0.58	2.0E-09	1
Iron	5.3E+03	1.0E-03	NA	NA	NA	NA	0.58	3.1E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.7.RME SUPPLEMENT B

Calculation of DAevent – Adult Resident, Middle Castle-Hayne Groundwater Group 2

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Tetrachloroethene	2.4E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.58	1.6E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.7.RME SUPPLEMENT C

Calculation of DAevent – Adult Resident, Middle Castle-Hayne Groundwater Group 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Chloroform	3.8E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.58	3.9E-09	2
Benzo(a)pyrene	2.0E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	0.58	4.8E-07	2
Benzo(b)fluoranthene	3.8E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	0.58	9.3E-07	2
Benzo(k)fluoranthene[1]	3.1E-01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	0.58	7.1E-07	2
Dibenz(a,h)anthracene	5.5E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	6.0E-01	0.58	2.2E-08	2
Indeno(1,2,3-cd)pyrene	4.5E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	6.0E-01	0.58	5.0E-09	2
Chromium	7.6E+01	2.0E-03	NA	NA	NA	NA	0.58	8.8E-08	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.7.RME SUPPLEMENT B2
Calculation of DA_{event}

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	MW	log Kow	Kow	log Kp[1]	Kp (cm/hr)	B[1]	log D_{sc}/l_{sc}[1]	D_{sc}/l_{sc}[1]	l_{sc} (cm)	D_{sc} (cm^2/hr)	τ_{event}[1] (hr)	c[1]	b[1]	t*[1] (hr)
Benzo(k)fluoranthene	2.52E+02	6.11E+00	1.29E+06	-1.81E-01	6.59E-01	4.03E+00	-4.21E+00	6.12E-05	1.00E-03	6.12E-08	2.72E+00	4.09E+00	1.20E+01	1.18E+01

Notes:

1. Equations from Risk Assessment Guidance for Superfund Volume 1; Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005. July 2004.

MW and log Kow from Texas Commission on Environmental Quality (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).

TABLE H 7.7.RME SUPPLEMENT D

Calculation of DAevent – Adult Resident, Upper Aquifer Plume 1 Groundwater Group 4

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Benzene	1.8E+00	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1.0E+00	0.58	1.6E-07	2
cis-1,2-Dichloroethene[1]	1.6E+02	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.58	1.6E-06	2
trans-1,2-Dichloroethene	5.2E+00	2.9E-02	3.7E-01	8.9E-01	1.0E+00	1.0E+00	0.58	3.0E-07	2
Trichloroethene	1.6E+02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1.0E+00	0.58	2.0E-05	2
Vinyl chloride	2.3E+01	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1.0E+00	0.58	6.1E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.7.RME SUPPLEMENT E

Calculation of DAevent – Adult Resident, Upper Aquifer Plume 2 Groundwater Group 5

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Benzene	4.5E-01	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.58	7.6E-09	2
cis-1,2-Dichloroethene[1]	3.0E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.58	3.0E-07	2
Tetrachloroethene	2.8E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.58	1.9E-08	2
trans-1,2-Dichloroethene	2.1E+00	7.7E-03	2.9E-02	3.7E-01	8.9E-01	1.0E+00	0.58	2.0E-08	2
Trichloroethene	1.4E+02	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.58	2.6E-06	2
Vinyl chloride	3.8E-01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	0.58	2.2E-09	3

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.7.RME SUPPLEMENT F

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
1,1-Dichloroethane	7.9E-01	9.9E+01	5.6E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	1.1E-01	8.8E-02	1.8E-03
2-Hexanone	1.4E+01	1.0E+02	9.3E-05	1.3E+03	1.3E+01	3.6E+00	4.9E+00	5.6E-01	4.6E-01	9.6E-03
Benzene	2.3E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	3.5E-01	2.9E-01	6.0E-03
Chloroform	6.9E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	8.3E-02	6.9E-02	1.4E-03
cis-1,2-Dichloroethene	3.6E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.8E+00	4.0E+00	8.2E-02
Dichlorodifluoromethane (Freon-12)	6.5E+00	1.2E+02	3.4E-01	1.2E+03	1.2E+01	1.2E+01	1.6E+01	8.2E-01	6.8E-01	1.4E-02
Ethylbenzene	9.2E-01	1.1E+02	7.9E-03	1.2E+03	1.3E+01	1.2E+01	1.7E+01	1.2E-01	1.0E-01	2.1E-03
Tetrachloroethene	1.9E+02	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.1E+01	1.7E+01	3.5E-01
Trichloroethene	4.5E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	5.4E+00	4.5E+00	9.3E-02
Vinyl chloride	1.0E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	1.7E+00	1.4E+00	2.9E-02
Naphthalene	1.9E-01	1.3E+02	4.4E-04	1.1E+03	1.2E+01	7.5E+00	1.0E+01	1.5E-02	1.3E-02	2.6E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	34.8
Dt = total duration in shower room	min	60
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.7.RME SUPPLEMENT G

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 2

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Tetrachloroethene	2.4E+00	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.6E-01	2.2E-01	4.5E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	34.8
Dt = total duration in shower room	min	60
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.7.RME SUPPLEMENT H

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Middle Castle-Hayne Groundwater Air Group 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Chloroform	3.8E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	4.6E-02	3.8E-02	7.9E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	34.8
Dt = total duration in shower room	min	60
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.7.RME SUPPLEMENT I
Inhalation Exposure Concentrations from Foster and Chrostowsk Shower Model, Upper Aquifer—Plume 1 Groundwater Air Group 4
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	1.8E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	2.8E-01	2.3E-01	4.8E-03
cis-1,2-Dichloroethene	1.6E+02	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.1E+01	1.8E+01	3.7E-01
trans-1,2-Dichloroethene	5.2E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	6.9E-01	5.8E-01	1.2E-02
Trichloroethene	1.6E+02	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	1.9E+01	1.6E+01	3.2E-01
Vinyl chloride	2.3E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	3.9E+00	3.2E+00	6.6E-02

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	34.8
Dt = total duration in shower room	min	60
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.7.RME SUPPLEMENT J
Inhalation Exposure Concentrations from Foster and Chrostowsk Shower Model, Upper Aquifer—Plume 2 Groundwater Air Group 5
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	4.5E-01	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	7.0E-02	5.8E-02	1.2E-03
cis-1,2-Dichloroethene	3.0E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.1E+00	3.4E+00	7.0E-02
Tetrachloroethene	2.8E-01	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	3.0E-02	2.5E-02	5.2E-04
trans-1,2-Dichloroethene	2.1E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.7E-01	2.3E-01	4.7E-03
Trichloroethene	2.7E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	3.2E+00	2.7E+00	5.5E-02
Vinyl chloride	3.8E-01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	6.5E-02	5.4E-02	1.1E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	34.8
Dt = total duration in shower room	min	60
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.8.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	NA		NA		NA	1.2E-06	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	NA		NA		NA	9.3E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	NA		NA		NA	1.3E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	NA		NA		NA	9.1E-07	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	NA		NA		NA	1.4E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	NA		NA		NA	7.2E-07	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	NA		NA		NA	1.3E-01	mg/kg/day	1.0E+00	mg/kg/day	1.3E-01
				Arsenic	1.5E+00	mg/kg	NA		NA		NA	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	6.3E-02
				Chromium	1.5E+01	mg/kg	NA		NA		NA	1.9E-04	mg/kg/day	3.0E-03	mg/kg/day	6.3E-02
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	6.5E-02
				Iron	4.0E+03	mg/kg	NA		NA		NA	5.1E-02	mg/kg/day	7.0E-01	mg/kg/day	7.2E-02
										Exp. Route Total	0.0E+00					4.0E-01
			Dermal Absorption[1]	Benzo(a)anthracene	9.5E-02	mg/kg	NA		NA		NA	4.4E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	NA		NA		NA	3.4E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	NA		NA		NA	4.6E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	NA		NA		NA	3.3E-07	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	NA		NA		NA	4.9E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	NA		NA		NA	2.6E-07	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	NA		NA		NA	3.7E-04	mg/kg/day	1.0E+00	mg/kg/day	3.7E-04
				Arsenic	1.5E+00	mg/kg	NA		NA		NA	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.3E-03
				Chromium	1.5E+01	mg/kg	NA		NA		NA	5.3E-07	mg/kg/day	7.5E-05	mg/kg/day	7.1E-03
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	5.4E-08	mg/kg/day	3.0E-04	mg/kg/day	1.8E-04
				Iron	4.0E+03	mg/kg	NA		NA		NA	1.4E-04	mg/kg/day	7.0E-01	mg/kg/day	2.0E-04
										Exp. Route Total	0.0E+00					1.3E-02
										Exposure Medium Total	0.0E+00					4.1E-01
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	NA		NA		NA	1.0E-08	mg/kg/day	1.0E-04	mg/m3	1.0E-04
										Exp. Route Total	0.0E+00					1.0E-04
										Exposure Medium Total	0.0E+00					1.0E-04
										Soil* in Industrial Area Total	0.0E+00					4.1E-01

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	NA		NA		NA	6.2E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	NA		NA		NA	7.8E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	NA		NA		NA	9.6E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	NA		NA		NA	6.9E-07	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	NA		NA		NA	7.4E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	NA		NA		NA	3.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	NA		NA		NA	5.6E-07	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	NA		NA		NA	2.6E-01	mg/kg/day	1.0E+00	mg/kg/day	2.6E-01
				Arsenic	1.1E+01	mg/kg	NA		NA		NA	1.4E-04	mg/kg/day	3.0E-04	mg/kg/day	4.8E-01
				Chromium	3.4E+01	mg/kg	NA		NA		NA	4.4E-04	mg/kg/day	3.0E-03	mg/kg/day	1.5E-01
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	6.4E-02
				Iron	1.4E+04	mg/kg	NA		NA		NA	1.8E-01	mg/kg/day	7.0E-01	mg/kg/day	2.5E-01
				Vanadium	5.9E+01	mg/kg	NA		NA		NA	7.6E-04	mg/kg/day	5.0E-03	mg/kg/day	1.5E-01
										Exp. Route Total	0.0E+00					1.4E+00
		Soil* from Flight Line Area	Dermal Absorption[1]	Benzo(a)anthracene	4.8E-02	mg/kg	NA		NA		NA	2.3E-07	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	NA		NA		NA	2.8E-07	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	NA		NA		NA	3.5E-07	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	NA		NA		NA	2.5E-07	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	NA		NA		NA	2.7E-07	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	NA		NA		NA	1.4E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	NA		NA		NA	2.1E-07	mg/kg/day	NA		NA
				Aluminum	2.1E+04	mg/kg	NA		NA		NA	7.4E-04	mg/kg/day	1.0E+00	mg/kg/day	7.4E-04
				Arsenic	1.1E+01	mg/kg	NA		NA		NA	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.0E-02
				Chromium	3.4E+01	mg/kg	NA		NA		NA	1.2E-06	mg/kg/day	7.5E-05	mg/kg/day	1.6E-02
				Cobalt	1.5E+00	mg/kg	NA		NA		NA	5.4E-08	mg/kg/day	3.0E-04	mg/kg/day	1.8E-04
				Iron	1.4E+04	mg/kg	NA		NA		NA	5.0E-04	mg/kg/day	7.0E-01	mg/kg/day	7.1E-04
				Vanadium	5.9E+01	mg/kg	NA		NA		NA	2.1E-06	mg/kg/day	1.3E-04	mg/kg/day	1.6E-02
										Exp. Route Total	0.0E+00					7.4E-02
										Exposure Point Total	0.0E+00					1.4E+00
										Exposure Medium Total	0.0E+00					1.4E+00
	Air	Emissions from Soil* in Flight Linel Area	Inhalation	Chromium	2.5E-08	mg/m^3	NA		NA		NA	2.4E-08	mg/kg/day	1.0E-04	mg/m3	2.4E-04
										Exp. Route Total	0.0E+00					2.4E-04
										Exposure Medium Total	0.0E+00					2.4E-04
										Soil* in Flight Line Area Total	0.0E+00					1.4E+00

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	NA		NA		NA	5.1E-05	mg/kg/day	2.0E-01	mg/kg/day	2.5E-04
				2-Hexanone	1.4E+01	µg/L	NA		NA		NA	8.9E-04	mg/kg/day	5.0E-03	mg/kg/day	1.8E-01
				Benzene	2.3E+00	µg/L	NA		NA		NA	1.4E-04	mg/kg/day	4.0E-03	mg/kg/day	3.6E-02
				Chloroform	6.9E-01	µg/L	NA		NA		NA	4.4E-05	mg/kg/day	1.0E-02	mg/kg/day	4.4E-03
				cis-1,2-Dichloroethene	3.6E+01	µg/L	NA		NA		NA	2.3E-03	mg/kg/day	1.0E-02	mg/kg/day	2.3E-01
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	NA		NA		NA	4.1E-04	mg/kg/day	2.0E-01	mg/kg/day	2.1E-03
				Ethylbenzene	9.2E-01	µg/L	NA		NA		NA	5.9E-05	mg/kg/day	1.0E-01	mg/kg/day	5.9E-04
				Tetrachloroethene	1.9E+02	µg/L	NA		NA		NA	1.2E-02	mg/kg/day	1.0E-02	mg/kg/day	1.2E+00
				Trichloroethene	4.5E+01	µg/L	NA		NA		NA	2.9E-03	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	NA		NA		NA	6.4E-04	mg/kg/day	3.0E-03	mg/kg/day	2.1E-01
				Naphthalene	1.9E-01	µg/L	NA		NA		NA	1.2E-05	mg/kg/day	2.0E-02	mg/kg/day	6.1E-04
				Antimony	3.4E+00	µg/L	NA		NA		NA	2.2E-04	mg/kg/day	4.0E-04	mg/kg/day	5.4E-01
				Iron	5.3E+03	µg/L	NA		NA		NA	3.4E-01	mg/kg/day	7.0E-01	mg/kg/day	4.8E-01
										Exp. Route Total	0.0E+00					2.9E+00
			Dermal Absorption[2]	1,1-Dichloroethane	7.9E-01	mg/kg	NA		NA		NA	4.0E-06	mg/kg/day	2.0E-01	mg/kg/day	2.0E-05
				2-Hexanone	1.4E+01	mg/kg	NA		NA		NA	3.7E-05	mg/kg/day	5.0E-03	mg/kg/day	7.4E-03
				Benzene	2.3E+00	mg/kg	NA		NA		NA	2.2E-05	mg/kg/day	4.0E-03	mg/kg/day	5.6E-03
				Chloroform	6.9E-01	mg/kg	NA		NA		NA	3.9E-06	mg/kg/day	1.0E-02	mg/kg/day	3.9E-04
				cis-1,2-Dichloroethene	3.6E+01	mg/kg	NA		NA		NA	2.0E-04	mg/kg/day	1.0E-02	mg/kg/day	2.0E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	mg/kg	NA		NA		NA	4.8E-05	mg/kg/day	2.0E-01	mg/kg/day	2.4E-04
				Ethylbenzene	9.2E-01	mg/kg	NA		NA		NA	3.4E-05	mg/kg/day	1.0E-01	mg/kg/day	3.4E-04
				Tetrachloroethene	1.9E+02	mg/kg	NA		NA		NA	7.1E-03	mg/kg/day	1.0E-02	mg/kg/day	7.1E-01
				Trichloroethene	4.5E+01	mg/kg	NA		NA		NA	4.7E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	mg/kg	NA		NA		NA	3.5E-05	mg/kg/day	3.0E-03	mg/kg/day	1.2E-02
				Naphthalene	1.9E-01	mg/kg	NA		NA		NA	7.7E-06	mg/kg/day	2.0E-02	mg/kg/day	3.9E-04
				Antimony	3.4E+00	mg/kg	NA		NA		NA	1.4E-06	mg/kg/day	6.0E-05	mg/kg/day	2.4E-02
				Iron	5.3E+03	mg/kg	NA		NA		NA	2.2E-03	mg/kg/day	7.0E-01	mg/kg/day	3.2E-03
										Exp. Route Total	0.0E+00					7.8E-01
										Exposure Point Total	0.0E+00					3.7E+00
										Exposure Medium Total	0.0E+00					3.7E+00

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
	Groundwater Air Group 1	Surficial Aquifer	Inhalation	1,1-Dichloroethane	2.7E-03	mg/m^3	NA		NA		NA	1.1E-04	mg/m^3	NA		NA
		Water Vapors at Showerhead		2-Hexanone	1.4E-02	mg/m^3	NA		NA		NA	5.6E-04	mg/m^3	3.0E-02	mg/m3	1.9E-02
				Benzene	8.8E-03	mg/m^3	NA		NA		NA	3.5E-04	mg/m^3	3.0E-02	mg/m3	1.2E-02
				Chloroform	2.1E-03	mg/m^3	NA		NA		NA	8.3E-05	mg/m^3	9.8E-02	mg/m3	8.5E-04
				cis-1,2-Dichloroethene	1.2E-01	mg/m^3	NA		NA		NA	4.8E-03	mg/m^3	NA		NA
				Dichlorodifluoromethane (Freon-12)	2.1E-02	mg/m^3	NA		NA		NA	8.2E-04	mg/m^3	2.0E-01	mg/m3	4.1E-03
				Ethylbenzene	3.0E-03	mg/m^3	NA		NA		NA	1.2E-04	mg/m^3	1.0E+00	mg/m3	1.2E-04
				Tetrachloroethene	5.1E-01	mg/m^3	NA		NA		NA	2.1E-02	mg/m^3	2.7E-01	mg/m3	7.6E-02
				Trichloroethene	1.4E-01	mg/m^3	NA		NA		NA	5.4E-03	mg/m^3	NA		NA
				Vinyl chloride	4.3E-02	mg/m^3	NA		NA		NA	1.7E-03	mg/m^3	1.0E-01	mg/m3	1.7E-02
				Naphthalene	3.8E-04	mg/m^3	NA		NA		NA	1.5E-05	mg/m^3	3.0E-03	mg/m3	5.1E-03
			Exp. Route Total								0.0E+00					1.3E-01
	Exposure Medium Total										0.0E+00					1.3E-01
Groundwater Group 1 Total											0.0E+00					3.8E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Tetrachloroethene	2.4E+00	µg/L	NA		NA		NA	1.5E-04	mg/kg/day	1.0E-02	mg/kg/day	1.5E-02
			Exp. Route Total								0.0E+00					1.5E-02
			Dermal Absorption[2]	Tetrachloroethene	2.4E+00	mg/kg	NA		NA		NA	8.9E-05	mg/kg/day	1.0E-02	mg/kg/day	8.9E-03
			Exp. Route Total								0.0E+00					8.9E-03
		Exposure Point Total									0.0E+00					2.4E-02
	Exposure Medium Total										0.0E+00					2.4E-02
	Groundwater Air Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Tetrachloroethene	6.5E-03	mg/m^3	NA		NA		NA	2.6E-04	mg/m^3	2.7E-01	mg/m3	9.6E-04
			Exp. Route Total								0.0E+00					9.6E-04
	Exposure Medium Total										0.0E+00					9.6E-04
Groundwater Group 2 Total											0.0E+00					2.5E-02

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	NA		NA		NA	2.4E-05	mg/kg/day	1.0E-02	mg/kg/day	2.4E-03
				Benzo(a)pyrene	2.0E-01	µg/L	NA		NA		NA	1.3E-05	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L	NA		NA		NA	2.4E-05	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L	NA		NA		NA	2.0E-05	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L	NA		NA		NA	3.5E-05	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	NA		NA		NA	2.9E-05	mg/kg/day	NA		NA
				Chromium	7.6E+01	µg/L	NA		NA		NA	4.9E-03	mg/kg/day	3.0E-03	mg/kg/day	1.6E+00
										Exp. Route Total	0.0E+00					1.6E+00
			Dermal Absorption[2]	Chloroform	3.8E-01	mg/kg	NA		NA		NA	2.1E-06	mg/kg/day	1.0E-02	mg/kg/day	2.1E-04
				Benzo(a)pyrene	2.0E-01	mg/kg	NA		NA		NA	2.7E-04	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	mg/kg	NA		NA		NA	5.2E-04	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	mg/kg	NA		NA		NA	3.9E-04	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	mg/kg	NA		NA		NA	1.2E-05	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	mg/kg	NA		NA		NA	2.8E-06	mg/kg/day	NA		NA
				Chromium	7.6E+01	mg/kg	NA		NA		NA	6.4E-05	mg/kg/day	7.5E-05	mg/kg/day	8.6E-01
										Exp. Route Total	0.0E+00					8.6E-01
										Exposure Point Total	0.0E+00					2.5E+00
										Exposure Medium Total	0.0E+00					2.5E+00
	Groundwater Air Group 3	Middle Castle_Hayne Water Vapors at Showerhead	Inhalation	Chloroform	1.1E-03	mg/m^3	NA		NA		NA	4.6E-05	mg/m^3	9.8E-02	mg/m3	4.7E-04
										Exp. Route Total	0.0E+00					4.7E-04
										Exposure Medium Total	0.0E+00					4.7E-04
										Groundwater Group 3 Total	0.0E+00					2.5E+00

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Castle-Hayne	Ingestion	Benzene	1.8E+00	µg/L	NA		NA		NA	1.2E-04	mg/kg/day	4.0E-03	mg/kg/day	2.9E-02
		Aquifer - Plume 1		cis-1,2-Dichloroethene	1.6E+02	µg/L	NA		NA		NA	1.0E-02	mg/kg/day	1.0E-02	mg/kg/day	1.0E+00
		Tap Water		trans-1,2-Dichloroethene	5.2E+00	µg/L	NA		NA		NA	3.3E-04	mg/kg/day	2.0E-02	mg/kg/day	1.7E-02
				Trichloroethene	1.6E+02	µg/L	NA		NA		NA	1.0E-02	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	NA		NA		NA	1.4E-03	mg/kg/day	3.0E-03	mg/kg/day	4.8E-01
										Exp. Route Total	0.0E+00					1.6E+00
			Dermal Absorption[2]	Benzene	1.8E+00	mg/kg	NA		NA		NA	9.8E-05	mg/kg/day	4.0E-03	mg/kg/day	2.5E-02
				cis-1,2-Dichloroethene	1.6E+02	mg/kg	NA		NA		NA	9.0E-04	mg/kg/day	1.0E-02	mg/kg/day	9.0E-02
				trans-1,2-Dichloroethene	5.2E+00	mg/kg	NA		NA		NA	2.0E-04	mg/kg/day	2.0E-02	mg/kg/day	1.0E-02
				Trichloroethene	1.6E+02	mg/kg	NA		NA		NA	1.6E-02	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	mg/kg	NA		NA		NA	3.6E-04	mg/kg/day	3.0E-03	mg/kg/day	1.2E-01
										Exp. Route Total	0.0E+00					2.4E-01
										Exposure Point Total	0.0E+00					1.8E+00
										Exposure Medium Total	0.0E+00					1.8E+00
	Groundwater Air Group 4	Upper Aquifer - Plume 1	Inhalation	Benzene	7.0E-03	mg/m^3	NA		NA		NA	2.8E-04	mg/m^3	3.0E-02	mg/m3	9.3E-03
		Water Vapors at Showerhead		cis-1,2-Dichloroethene	5.4E-01	mg/m^3	NA		NA		NA	2.1E-02	mg/m^3	NA		NA
				trans-1,2-Dichloroethene	1.7E-02	mg/m^3	NA		NA		NA	6.9E-04	mg/m^3	6.0E-02	mg/m3	1.2E-02
				Trichloroethene	4.7E-01	mg/m^3	NA		NA		NA	1.9E-02	mg/m^3	NA		NA
				Vinyl chloride	9.7E-02	mg/m^3	NA		NA		NA	3.9E-03	mg/m^3	1.0E-01	mg/m3	3.9E-02
										Exp. Route Total	0.0E+00					5.9E-02
										Exposure Medium Total	0.0E+00					5.9E-02
										Groundwater Group 4 Total	0.0E+00					1.9E+00

TABLE H 7.8.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 5	Upper Castle-Hayne	Ingestion	Benzene	4.5E-01	µg/L	NA		NA		NA	2.9E-05	mg/kg/day	4.0E-03	mg/kg/day	7.2E-03
		Aquifer - Plume 2		cis-1,2-Dichloroethene	3.0E+01	µg/L	NA		NA		NA	1.9E-03	mg/kg/day	1.0E-02	mg/kg/day	1.9E-01
		Tap Water		Tetrachloroethene	2.8E-01	µg/L	NA		NA		NA	1.8E-05	mg/kg/day	1.0E-02	mg/kg/day	1.8E-03
				trans-1,2-Dichloroethene	2.1E+00	µg/L	NA		NA		NA	1.3E-04	mg/kg/day	2.0E-02	mg/kg/day	6.6E-03
				Trichloroethene	1.4E+02	µg/L	NA		NA		NA	8.9E-03	mg/kg/day	NA		NA
				Vinyl chloride	3.8E-01	µg/L	NA		NA		NA	2.4E-05	mg/kg/day	3.0E-03	mg/kg/day	8.1E-03
				Exp. Route Total							0.0E+00					2.2E-01
			Dermal Absorption[2]	Benzene	4.5E-01	mg/kg	NA		NA		NA	4.4E-06	mg/kg/day	4.0E-03	mg/kg/day	1.1E-03
				cis-1,2-Dichloroethene	3.0E+01	mg/kg	NA		NA		NA	1.7E-04	mg/kg/day	1.0E-02	mg/kg/day	1.7E-02
				Tetrachloroethene	2.8E-01	mg/kg	NA		NA		NA	1.0E-05	mg/kg/day	1.0E-02	mg/kg/day	1.0E-03
				trans-1,2-Dichloroethene	2.1E+00	mg/kg	NA		NA		NA	1.2E-05	mg/kg/day	2.0E-02	mg/kg/day	5.8E-04
				Trichloroethene	1.4E+02	mg/kg	NA		NA		NA	1.4E-03	mg/kg/day	NA		NA
				Vinyl chloride	3.8E-01	mg/kg	NA		NA		NA	1.3E-06	mg/kg/day	3.0E-03	mg/kg/day	4.4E-04
				Exp. Route Total							0.0E+00					2.0E-02
		Exposure Point Total									0.0E+00					2.4E-01
	Exposure Medium Total										0.0E+00					2.4E-01
	Groundwater Air Group 5	Upper Aquifer - Plume 2	Inhalation	Benzene	1.8E-03	mg/m^3	NA		NA		NA	7.0E-05	mg/m^3	3.0E-02	mg/m3	2.3E-03
		Water Vapors at Showerhead		cis-1,2-Dichloroethene	1.0E-01	mg/m^3	NA		NA		NA	4.1E-03	mg/m^3	NA		NA
				Tetrachloroethene	7.6E-04	mg/m^3	NA		NA		NA	3.0E-05	mg/m^3	2.7E-01	mg/m3	1.1E-04
				trans-1,2-Dichloroethene	6.9E-03	mg/m^3	NA		NA		NA	2.8E-04	mg/m^3	6.0E-02	mg/m3	4.6E-03
				Trichloroethene	8.0E-02	mg/m^3	NA		NA		NA	3.2E-03	mg/m^3	NA		NA
				Vinyl chloride	1.6E-03	mg/m^3	NA		NA		NA	6.5E-05	mg/m^3	1.0E-01		6.5E-04
				Exp. Route Total							0.0E+00					7.7E-03
	Exposure Medium Total										0.0E+00					7.7E-03
Groundwater Group 5 Total											0.0E+00					2.5E-01
Total of Receptor Risks Across All Media											0.0E+00	Total of Receptor Hazards Across All Media				5.7E+00

Notes:

* Soil = combined surface and subsurface soil

1. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

2. DAevent for dermal exposure to groundwater calculated on Tables H 7.8.RME Supplements A-E.

3. Inhalation exposures calculated on Tables H 7.8.RME Supplement F-J.

TABLE H 7.8.RME SUPPLEMENT A
Calculation of DAevent – Child Resident, Surficial Groundwater Group 1
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
1,1-Dichloroethane	7.9E-01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	1	9.4E-09	3
2-Hexanone[1]	1.4E+01	3.6E-03	1.4E-02	3.8E-01	9.2E-01	1.0E+00	1	8.8E-08	3
Benzene	2.3E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1	5.3E-08	3
Chloroform	6.9E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	1	9.2E-09	2
cis-1,2-Dichloroethene[1]	3.6E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	1	4.8E-07	3
Dichlorodifluoromethane (Freon-12)	6.5E+00	9.0E-03	3.8E-02	5.1E-01	1.2E+00	1.0E+00	1	1.1E-07	2
Ethylbenzene	9.2E-01	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	1	8.1E-08	2
Tetrachloroethene	1.9E+02	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	1	1.7E-05	2
Trichloroethene	4.5E+01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1	1.1E-06	2
Vinyl chloride	1.0E+01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1	8.2E-08	3
Naphthalene	1.9E-01	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	1	1.8E-08	2
Antimony	3.4E+00	1.0E-03	NA	NA	NA	NA	1	3.4E-09	1
Iron	5.3E+03	1.0E-03	NA	NA	NA	NA	1	5.3E-06	1

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.8.RME SUPPLEMENT B

Calculation of DAevent – Child Resident, Middle Castle-Hayne Groundwater Group 2

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Tetrachloroethene	2.4E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	1	2.1E-07	2

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.8.RME SUPPLEMENT C

Calculation of DAevent – Child Resident, Middle Castle-Hayne Groundwater Group 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Chloroform	3.8E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	1	5.1E-09	2
Benzo(a)pyrene	2.0E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	1	6.4E-07	2
Benzo(b)fluoranthene	3.8E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	1	1.2E-06	2
Benzo(k)fluoranthene[1]	3.1E-01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	1	9.3E-07	2
Dibenz(a,h)anthracene	5.5E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	6.0E-01	1	2.9E-08	2
Indeno(1,2,3-cd)pyrene	4.5E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	6.0E-01	1	6.6E-09	2
Chromium	7.6E+01	2.0E-03	NA	NA	NA	NA	1	1.5E-07	1

Inorganics: DA_{event} (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/µg $\times$ 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If $t_{event} < t^*$, then DA_{event} =

$2 \times FA \times Kp \times CW \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event})/\pi))$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 2)

If $t_{event} > t^*$, then DA_{event} =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2)$ $\times$ 0.001 mg/µg $\times$ 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 ($t^* = 2.4\ t_{event}$) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.8.RME SUPPLEMENT D

Calculation of DAevent – Child Resident, Upper Aquifer Plume 1 Groundwater Group 4

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Benzene	1.8E+00	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1.0E+00	1	2.3E-07	3
cis-1,2-Dichloroethene[1]	1.6E+02	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	1	2.1E-06	3
trans-1,2-Dichloroethene	5.2E+00	2.9E-02	3.7E-01	8.9E-01	1.0E+00	1.0E+00	1	4.7E-07	3
Trichloroethene	1.6E+02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1.0E+00	1	3.9E-05	3
Vinyl chloride	2.3E+01	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1.0E+00	1	8.5E-07	3

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.8.RME SUPPLEMENT E

Calculation of DAevent – Child Resident, Upper Aquifer Plume 2 Groundwater Group 5

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (t_{event}) (hr)	DA_{event} (mg/cm^2-event)	Eq
Benzene	4.5E-01	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1	1.0E-08	3
cis-1,2-Dichloroethene[1]	3.0E+01	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	1	4.0E-07	3
Tetrachloroethene	2.8E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	1	2.5E-08	2
trans-1,2-Dichloroethene	2.1E+00	7.7E-03	2.9E-02	3.7E-01	8.9E-01	1.0E+00	1	2.8E-08	3
Trichloroethene	1.4E+02	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1	3.4E-06	2
Vinyl chloride	3.8E-01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1	3.1E-09	3

Inorganics: DA_{event} (mg/cm^2-event) =

Kp x CW x t_{event} x 0.001 mg/µg x 0.001 L/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If t_{event}<t*, then DA_{event} =
2 x FA x Kp x CW x (sqrt((6 x τ_{event} x t_{event})/π)) x 0.001 mg/µg x 0.001 L/cm^3 (eq 2)

If t_{event}>t*, then DA_{event} =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ_{event} x ((1 + 3xB + 3xB^2)/(1+B)^2) x 0.001 mg/µg x 0.001 L/cm^3 (eq 3)

Notes:

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
NA - Not applicable
t* - Time to reach steady-state

Permeability constants from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

* Permeability constants calculated using Equation 3.8 (log Kp = 2.80 + 0.66 log Kow - 0.0056 MW, where r2 = 0.66) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

[1]Lag time and B calculated on Table H 7.6.RME Supplement B

B calculated using Equation A.1 (B = Kp * MW1/2/2.6) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

t_{event} calculated using Equation A.4 (t_{event} = lsc2/6Dsc = 0.105 × 10^[0.0056 MW]) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

Since B ≤ 0.6, then t* calculated using Equation A.4 (t* = 2.4 t_{event}) from EPA 2004, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final). EPA/540/R/99/005.

TABLE H 7.8.RME SUPPLEMENT F

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
1,1-Dichloroethane	7.9E-01	9.9E+01	5.6E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	1.1E-01	8.8E-02	2.7E-03
2-Hexanone	1.4E+01	1.0E+02	9.3E-05	1.3E+03	1.3E+01	3.6E+00	4.9E+00	5.6E-01	4.6E-01	1.4E-02
Benzene	2.3E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	3.5E-01	2.9E-01	8.8E-03
Chloroform	6.9E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	8.3E-02	6.9E-02	2.1E-03
cis-1,2-Dichloroethene	3.6E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.8E+00	4.0E+00	1.2E-01
Dichlorodifluoromethane (Freon-12)	6.5E+00	1.2E+02	3.4E-01	1.2E+03	1.2E+01	1.2E+01	1.6E+01	8.2E-01	6.8E-01	2.1E-02
Ethylbenzene	9.2E-01	1.1E+02	7.9E-03	1.2E+03	1.3E+01	1.2E+01	1.7E+01	1.2E-01	1.0E-01	3.0E-03
Tetrachloroethene	1.9E+02	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.1E+01	1.7E+01	5.1E-01
Trichloroethene	4.5E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	5.4E+00	4.5E+00	1.4E-01
Vinyl chloride	1.0E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	1.7E+00	1.4E+00	4.3E-02
Naphthalene	1.9E-01	1.3E+02	4.4E-04	1.1E+03	1.2E+01	7.5E+00	1.0E+01	1.5E-02	1.3E-02	3.8E-04

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	60
Dt = total duration in shower room	min	80
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1: Kg(VOC) = $3000 * (18 / MW)^{0.5}$

TABLE H 7.8.RME SUPPLEMENT F

Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model—Surficial Groundwater Air Group 1

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.8.RME SUPPLEMENT G

INHALATION EXPOSURE CONCENTRATIONS FROM FOSTER AND CHROSTOWSKI SHOWER MODEL - MIDDLE CASTLE-HAYNE GROUNDWATER AIR GROUP 2

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Tetrachloroethene	2.4E+00	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	2.6E-01	2.2E-01	6.5E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	60
Dt = total duration in shower room	min	80
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.8.RME SUPPLEMENT H

INHALATION EXPOSURE CONCENTRATIONS FROM FOSTER AND CHROSTOWSKI SHOWER MODEL - MIDDLE CASTLE-HAYNE GROUNDWATER AIR GROUP 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Chloroform	3.8E-01	1.2E+02	3.7E-03	1.2E+03	1.2E+01	1.1E+01	1.5E+01	4.6E-02	3.8E-02	1.1E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	60
Dt = total duration in shower room	min	80
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.8.RME SUPPLEMENT I

INHALATION EXPOSURE CONCENTRATIONS FROM FOSTER AND CHROSTOWSKI SHOWER MODEL - UPPER AQUIFER - PLUME 1 GROUNDWATER AIR GROUP 4

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	1.8E+00	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	2.8E-01	2.3E-01	7.0E-03
cis-1,2-Dichloroethene	1.6E+02	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.1E+01	1.8E+01	5.4E-01
trans-1,2-Dichloroethene	5.2E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	6.9E-01	5.8E-01	1.7E-02
Trichloroethene	1.6E+02	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	1.9E+01	1.6E+01	4.7E-01
Vinyl chloride	2.3E+01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	3.9E+00	3.2E+00	9.7E-02

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	60
Dt = total duration in shower room	min	80
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.8.RME SUPPLEMENT J

INHALATION EXPOSURE CONCENTRATIONS FROM FOSTER AND CHROSTOWSKI SHOWER MODEL - UPPER AQUIFER - PLUME 2 GROUNDWATER AIR GROUP 5

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical of Potential Concern	Exposure Point Concentration Cwo (µg/L)	Molecular weight (MW) (g/mole)	Henry's Law Constant (H) (atm-m^3/mole)	Kg (VOC) (cm/hr)	Kl (VOC) (cm/hr)	KL (cm/hr)	Kal (cm/hr)	Cwd (µg/L)	S (µg/m^3 -min)	Ca (mg/m^3)
Benzene	4.5E-01	7.8E+01	2.3E-01	1.4E+03	1.5E+01	1.5E+01	2.0E+01	7.0E-02	5.8E-02	1.8E-03
cis-1,2-Dichloroethene	3.0E+01	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	4.1E+00	3.4E+00	1.0E-01
Tetrachloroethene	2.8E-01	1.7E+02	1.8E-02	9.9E+02	1.0E+01	1.0E+01	1.4E+01	3.0E-02	2.5E-02	7.6E-04
trans-1,2-Dichloroethene	2.1E+00	9.7E+01	4.1E-03	1.3E+03	1.3E+01	1.3E+01	1.7E+01	2.7E-01	2.3E-01	6.9E-03
Trichloroethene	2.7E+01	1.3E+02	9.9E-03	1.1E+03	1.2E+01	1.1E+01	1.5E+01	3.2E+00	2.7E+00	8.0E-02
Vinyl chloride	3.8E-01	6.3E+01	2.8E-02	1.6E+03	1.7E+01	1.7E+01	2.2E+01	6.5E-02	5.4E-02	1.6E-03

Notes:

Variables	Units	Exposure Assumptions
Kg(VOC) = gas-film mass transfer coefficient	cm/hr	Solved by Eq 1
Kl(VOC) = liquid-film mass transfer coefficient	cm/hr	Solved by Eq 2
KL = overall mass transfer coefficient	cm/hr	Solved by Eq 3
Kal = adjusted overall mass transfer coeff.	cm/hr	Solved by Eq 4
Tl = Calibration temp. of water	K (20C +273)	293
Ts = Shower water temperature	k (45C)	318
Us = water viscosity at Ts	centipoise	0.596
Ul = water viscosity at Tl	cp	1.002
Cwd = conc. leaving droplets after time sdt	µg/l	Solved by Eq 5
sdt = shower droplet drop time	sec	0.5
d = shower droplet diameter	mm	1
FR = shower water flow rate	l/min	10
SV = shower room air volume	m^3	12
S = indoor VOC generation rate	µg/m^3-min	Solved by Eq 6
Ds = duration of shower	min	60
Dt = total duration in shower room	min	80
R = air exchange rate	min^{-1}	0.0083
Ca = indoor air concentration of VOCs	µg/m^3	Solved by Eq 7

Equation 1:	Kg(VOC) =	$3000 * (18 / MW)^{0.5}$
Equation 2:	Kl(VOC) =	$20 * (44 / MW)^{0.5}$
Equation 3:	KL =	$((1 / Kl(VOC)) + (0.024 / (Kg (VOC) * H)))^{-1}$
Equation 4:	Kal =	$(KL * (((Tl * Us) / (Ts * Ul))^{-0.5}))$
Equation 5:	Cwd =	(Cwo * (1-EXP((-1 * Kal * sdt)/(60 * d))))
Equation 6:	S =	(Cwd * FR / SV)
Equation 7:	Ca =	If t>Ds [(S / R) * (Ds + (EXP(-R * Dt) / R) -(EXP(R *(Ds - Dt)) / R)] / Dt * 1/1000

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene[4]	9.5E-02	mg/kg			7.3E-01	mg/kg/day	4.7E-07	NA		NA		NA
				Benzo(a)pyrene[4]	7.3E-02	mg/kg			7.3E+00	mg/kg/day	3.6E-06	NA		NA		NA
				Benzo(b)fluoranthene[4]	9.9E-02	mg/kg			7.3E-01	mg/kg/day	4.9E-07	NA		NA		NA
				Benzo(k)fluoranthene[4]	7.1E-02	mg/kg			7.3E-02	mg/kg/day	3.5E-08	NA		NA		NA
				Chrysene[4]	1.1E-01	mg/kg			7.3E-03	mg/kg/day	5.2E-09	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	5.6E-02	mg/kg			7.3E-01	mg/kg/day	2.8E-07	NA		NA		NA
				Aluminum	1.0E+04	mg/kg	1.6E-02	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	1.5E+00	mg/kg	2.3E-06	mg/kg/day	1.5E+00	mg/kg/day	3.5E-06	NA		NA		NA
				Chromium[4]	1.5E+01	mg/kg			5.0E-01	mg/kg/day	5.0E-05	NA		NA		NA
				Cobalt	1.5E+00	mg/kg	2.4E-06	mg/kg/day	NA		NA	NA		NA		NA
				Iron	4.0E+03	mg/kg	6.2E-03	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	5.8E-05					0.0E+00
			Dermal Absorption[1]	Benzo(a)anthracene[4]	9.5E-02	mg/kg			7.3E-01	mg/kg/day	1.2E-06	NA		NA		NA
				Benzo(a)pyrene[4]	7.3E-02	mg/kg			7.3E+00	mg/kg/day	9.1E-06	NA		NA		NA
				Benzo(b)fluoranthene[4]	9.9E-02	mg/kg			7.3E-01	mg/kg/day	1.2E-06	NA		NA		NA
				Benzo(k)fluoranthene[4]	7.1E-02	mg/kg			7.3E-02	mg/kg/day	8.9E-08	NA		NA		NA
				Chrysene[4]	1.1E-01	mg/kg			7.3E-03	mg/kg/day	1.3E-08	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	5.6E-02	mg/kg			7.3E-01	mg/kg/day	7.0E-07	NA		NA		NA
				Aluminum	1.0E+04	mg/kg	5.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	1.5E+00	mg/kg	2.2E-07	mg/kg/day	1.5E+00	mg/kg/day	3.3E-07	NA		NA		NA
				Chromium[4]	1.5E+01	mg/kg			1.3E-02	mg/kg/day	2.4E-08	NA		NA		NA
				Cobalt	1.5E+00	mg/kg	7.5E-09	mg/kg/day	NA		NA	NA		NA		NA
				Iron	4.0E+03	mg/kg	2.0E-05	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.3E-05					0.0E+00
										Exposure Medium Total	7.1E-05					0.0E+00
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3			8.4E-02	$(\mu g/m^3)^{-1}$	1.7E-11	NA		NA		NA
										Exp. Route Total	1.7E-11					0.0E+00
										Exposure Medium Total	1.7E-11					0.0E+00
										Soil* in Industrial Area Total	7.1E-05					0.0E+00

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* from Flight Line Area	Ingestion	Benzo(a)anthracene[4]	4.8E-02	mg/kg			7.3E-01	mg/kg/day	2.4E-07	NA		NA		NA
				Benzo(a)pyrene[4]	6.1E-02	mg/kg			7.3E+00	mg/kg/day	3.0E-06	NA		NA		NA
				Benzo(b)fluoranthene[4]	7.5E-02	mg/kg			7.3E-01	mg/kg/day	3.7E-07	NA		NA		NA
				Benzo(k)fluoranthene[4]	5.4E-02	mg/kg			7.3E-02	mg/kg/day	2.6E-08	NA		NA		NA
				Chrysene[4]	5.8E-02	mg/kg			7.3E-03	mg/kg/day	2.8E-09	NA		NA		NA
				Dibenz(a,h)anthracene[4]	3.1E-03	mg/kg			7.3E+00	mg/kg/day	1.5E-07	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	4.4E-02	mg/kg			7.3E-01	mg/kg/day	2.2E-07	NA		NA		NA
				Aluminum	2.1E+04	mg/kg	3.2E-02	mg/kg/day	NA		NA	NA		NA		NA
				Arsenic	1.1E+01	mg/kg	1.7E-05	mg/kg/day	1.5E+00	mg/kg/day	2.6E-05	NA		NA		NA
				Chromium[4]	3.4E+01	mg/kg			5.0E-01	mg/kg/day	1.1E-04	NA		NA		NA
				Cobalt	1.5E+00	mg/kg	2.4E-06	mg/kg/day	NA		NA	NA		NA		NA
				Iron	1.4E+04	mg/kg	2.2E-02	mg/kg/day	NA		NA	NA		NA		NA
				Vanadium	5.9E+01	mg/kg	9.3E-05	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.5E-04					0.0E+00
			Dermal Absorption[1]	Benzo(a)anthracene[4]	4.8E-02	mg/kg			7.3E-01	mg/kg/day	6.0E-07	NA		NA		NA
				Benzo(a)pyrene[4]	6.1E-02	mg/kg			7.3E+00	mg/kg/day	7.6E-06	NA		NA		NA
				Benzo(b)fluoranthene[4]	7.5E-02	mg/kg			7.3E-01	mg/kg/day	9.3E-07	NA		NA		NA
				Benzo(k)fluoranthene[4]	5.4E-02	mg/kg			7.3E-02	mg/kg/day	6.7E-08	NA		NA		NA
				Chrysene[4]	5.8E-02	mg/kg			7.3E-03	mg/kg/day	7.2E-09	NA		NA		NA
				Dibenz(a,h)anthracene[4]	3.1E-03	mg/kg			7.3E-01	mg/kg/day	3.8E-07	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	4.4E-02	mg/kg			7.3E-01	mg/kg/day	5.5E-07	NA		NA		NA
				Aluminum	2.1E+04	mg/kg	1.0E-04	mg/kg/day	NA	mg/kg/day	NA	NA		NA		NA
				Arsenic	1.1E+01	mg/kg	1.7E-06	mg/kg/day	1.5E+00		2.5E-06	NA		NA		NA
				Chromium[4]	3.4E+01	mg/kg			1.3E-02	mg/kg/day	5.6E-08	NA		NA		NA
				Cobalt	1.5E+00	mg/kg	7.4E-09	mg/kg/day	NA	mg/kg/day	NA	NA		NA		NA
				Iron	1.4E+04	mg/kg	6.9E-05	mg/kg/day	NA		NA	NA		NA		NA
				Vanadium	5.9E+01	mg/kg	2.9E-07	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.3E-05					0.0E+00
										Exposure Point Total	1.6E-04					0.0E+00
										Exposure Medium Total	1.6E-04					0.0E+00
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3			8.4E-02	$(\mu g/m^3)^{-1}$	3.9E-11	NA		NA		NA
										Exp. Route Total	3.9E-11					0.0E+00
										Exposure Medium Total	3.9E-11					0.0E+00
										Soil* in Flight Line Area Total	1.6E-04					0.0E+00

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer -	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	1.2E-05	mg/kg/day	5.7E-03	mg/kg/day	6.7E-08	NA		NA		NA
		Tap Water		2-Hexanone	1.4E+01	µg/L	2.1E-04	mg/kg/day	NA		NA	NA		NA		NA
				Benzene	2.3E+00	µg/L	3.4E-05	mg/kg/day	5.5E-02	mg/kg/day	1.9E-06	NA		NA		NA
				Chloroform	6.9E-01	µg/L	1.0E-05	mg/kg/day	3.1E-02	mg/kg/day	3.2E-07	NA		NA		NA
				cis-1,2-Dichloroethene	3.6E+01	µg/L	5.4E-04	mg/kg/day	NA		NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	9.7E-05	mg/kg/day	NA		NA	NA		NA		NA
				Ethylbenzene	9.2E-01	µg/L	1.4E-05	mg/kg/day	1.1E-02	mg/kg/day	1.5E-07	NA		NA		NA
				Tetrachloroethene	1.9E+02	µg/L	2.8E-03	mg/kg/day	5.4E-01	mg/kg/day	1.5E-03	NA		NA		NA
				Trichloroethene	4.5E+01	µg/L	6.8E-04	mg/kg/day	5.9E-03	mg/kg/day	4.0E-06	NA		NA		NA
				Vinyl chloride	1.0E+01	µg/L	1.5E-04	mg/kg/day	7.2E-01	mg/kg/day	1.1E-04	NA		NA		NA
				Naphthalene	1.9E-01	µg/L	2.8E-06	mg/kg/day	NA		NA	NA		NA		NA
				Antimony	3.4E+00	µg/L	5.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Iron	5.3E+03	µg/L	7.9E-02	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	1.6E-03					0.0E+00
			Dermal Absorption[2]	1,1-Dichloroethane	7.9E-01	µg/L	9.3E-07	mg/kg/day	5.7E-03	mg/kg/day	5.3E-09	NA		NA		NA
				2-Hexanone	1.4E+01	µg/L	8.6E-06	mg/kg/day	NA		NA	NA		NA		NA
				Benzene	2.3E+00	µg/L	5.1E-06	mg/kg/day	5.5E-02	mg/kg/day	2.8E-07	NA		NA		NA
				Chloroform	6.9E-01	µg/L	9.2E-07	mg/kg/day	3.1E-02	mg/kg/day	2.9E-08	NA		NA		NA
				cis-1,2-Dichloroethene	3.6E+01	µg/L	4.7E-05	mg/kg/day	NA		NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	1.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Ethylbenzene	9.2E-01	µg/L	8.2E-06	mg/kg/day	1.1E-02	mg/kg/day	9.0E-08	NA		NA		NA
				Tetrachloroethene	1.9E+02	µg/L	1.7E-03	mg/kg/day	5.4E-01	mg/kg/day	9.1E-04	NA		NA		NA
				Trichloroethene	4.5E+01	µg/L	1.1E-04	mg/kg/day	5.9E-03	mg/kg/day	6.6E-07	NA		NA		NA
				Vinyl chloride	1.0E+01	µg/L	7.9E-06	mg/kg/day	7.2E-01	mg/kg/day	5.7E-06	NA		NA		NA
				Naphthalene	1.9E-01	µg/L	1.8E-06	mg/kg/day	NA		NA	NA		NA		NA
				Antimony	3.4E+00	µg/L	2.9E-07	mg/kg/day	NA		NA	NA		NA		NA
				Iron	5.3E+03	µg/L	4.5E-04	mg/kg/day	NA		NA	NA		NA		NA
										Exp. Route Total	9.1E-04					0.0E+00
										Exposure Point Total	2.6E-03					0.0E+00
										Exposure Medium Total	2.6E-03					0.0E+00

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
	Groundwater Air Group 1	Surficial Aquifer	Inhalation	1,1-Dichloroethane	4.1E+01	µg/m^3	2.4E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	3.8E-08	NA		NA		NA
		Water Vapors at Showerhead		2-Hexanone	2.2E+02	µg/m^3	1.2E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Benzene	1.4E+02	µg/m^3	7.8E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	6.1E-07	NA		NA		NA
				Chloroform	3.2E+01	µg/m^3	1.8E-02	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	4.2E-07	NA		NA		NA
				cis-1,2-Dichloroethene	1.9E+03	µg/m^3	1.1E+00	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Dichlorodifluoromethane (Freon-12)	3.2E+02	µg/m^3	1.8E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA		NA		NA
				Ethylbenzene	4.7E+01	µg/m^3	2.7E-02	µg/m^3	2.5E-06	(µg/m^3)$^{-1}$	6.7E-08	NA		NA		NA
				Tetrachloroethene	8.0E+03	µg/m^3	4.6E+00	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	2.7E-05	NA		NA		NA
				Trichloroethene	2.1E+03	µg/m^3	1.2E+00	µg/m^3	2.0E-06	(µg/m^3)$^{-1}$	2.4E-06	NA		NA		NA
				Vinyl chloride	6.6E+02	µg/m^3	3.8E-01	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.7E-06	NA		NA		NA
				Naphthalene	6.0E+00	µg/m^3	3.4E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.2E-07	NA		NA		NA
										Exp. Route Total	3.2E-05					0.0E+00
										Exposure Medium Total	2.6E-03					0.0E+00
										Groundwater Group 1 Total	2.6E-03					0.0E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Tetrachloroethene	2.4E+00	µg/L	3.6E-05	mg/kg/day	5.4E-01	mg/kg/day	1.9E-05	NA		NA		NA
										Exp. Route Total	1.9E-05					0.0E+00
			Dermal Absorption[2]	Tetrachloroethene	2.4E+00	mg/kg	2.1E-05	mg/kg/day	5.4E-01	mg/kg/day	1.1E-05	NA		NA		NA
										Exp. Route Total	1.1E-05					0.0E+00
										Exposure Point Total	3.1E-05					0.0E+00
										Exposure Medium Total	3.1E-05					0.0E+00
	Groundwater Air Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Inhalation	Tetrachloroethene	1.0E+02	µg/m^3	5.8E-02	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	3.4E-07	NA		NA		NA
										Exp. Route Total	3.4E-07					0.0E+00
										Exposure Medium Total	3.1E-05					0.0E+00
										Groundwater Group 2 Total	3.1E-05					0.0E+00

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	5.7E-06	mg/kg/day	3.1E-02	mg/kg/day	1.8E-07	NA		NA		NA
				Benzo(a)pyrene[4]	2.0E-01	µg/L			7.3E+00	mg/kg/day	6.8E-05	NA		NA		NA
				Benzo(b)fluoranthene[4]	3.8E-01	µg/L			7.3E-01	mg/kg/day	1.3E-05	NA		NA		NA
				Benzo(k)fluoranthene[4]	3.1E-01	µg/L			7.3E-02	mg/kg/day	1.1E-06	NA		NA		NA
				Dibenz(a,h)anthracene[4]	5.5E-01	µg/L			7.3E+00	mg/kg/day	1.9E-04	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	4.5E-01	µg/L			7.3E-01	mg/kg/day	1.5E-05	NA		NA		NA
				Chromium[4]	7.6E+01	µg/L			5.0E-01	mg/kg/day	1.8E-03	NA		NA		NA
			Exp. Route Total								2.0E-03					0.0E+00
			Dermal Absorption[2]	Chloroform	3.8E-01	µg/L	5.1E-07	mg/kg/day	3.1E-02	mg/kg/day	1.6E-08	NA		NA		NA
				Benzo(a)pyrene[4]	2.0E-01	µg/L			7.3E+00	mg/kg/day	1.4E-03	NA		NA		NA
				Benzo(b)fluoranthene[4]	3.8E-01	µg/L			7.3E-01	mg/kg/day	2.8E-04	NA		NA		NA
				Benzo(k)fluoranthene[4]	3.1E-01	µg/L			7.3E-02	mg/kg/day	2.1E-05	NA		NA		NA
				Dibenz(a,h)anthracene[4]	5.5E-01	µg/L			7.3E-03	mg/kg/day	6.6E-05	NA		NA		NA
				Indeno(1,2,3-cd)pyrene[4]	4.5E-01	µg/L			7.3E+00	mg/kg/day	1.5E-06	NA		NA		NA
				Chromium[4]	7.6E+01	µg/L			1.3E-02	mg/kg/day	5.4E-07	NA		NA		NA
																0.0E+00
			Exp. Route Total								1.8E-03					0.0E+00
		Exposure Point Total									3.9E-03					0.0E+00
	Exposure Medium Total										3.9E-03					0.0E+00
	Groundwater Air Group 3	Middle Castle_Hayne Water Vapors at Showerhead	Inhalation	Chloroform	7.6E+02	µg/m^3	4.3E-01	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	9.9E-06	NA		NA		NA
			Exp. Route Total								9.9E-06					0.0E+00
	Exposure Medium Total										3.9E-03					0.0E+00
Groundwater Group 3 Total											3.9E-03					0.0E+00

TABLE H 7.9.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Castle-Hayne Aquifer - Plume 1 Tap Water	Ingestion	Benzene	1.8E+00	µg/L	2.7E-05	mg/kg/day	5.5E-02	mg/kg/day	1.5E-06	NA		NA		NA
				cis-1,2-Dichloroethene	1.6E+02	µg/L	2.4E-03	mg/kg/day	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	5.2E+00	µg/L	7.7E-05	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.6E+02	µg/L	2.3E-03	mg/kg/day	5.9E-03	mg/kg/day	1.4E-05	NA		NA		NA
				Vinyl chloride	2.3E+01	µg/L	3.4E-04	mg/kg/day	7.2E-01	mg/kg/day	2.4E-04	NA		NA		NA
										Exp. Route Total	2.6E-04					0.0E+00
			Dermal Absorption[2]	Benzene	1.8E+00	µg/L	2.2E-05	mg/kg/day	5.5E-02	mg/kg/day	1.2E-06	NA		NA		NA
				cis-1,2-Dichloroethene	1.6E+02	µg/L	2.1E-04	mg/kg/day	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	5.2E+00	µg/L	4.3E-05	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.6E+02	µg/L	3.1E-03	mg/kg/day	5.9E-03	mg/kg/day	1.8E-05	NA		NA		NA
				Vinyl chloride	2.3E+01	µg/L	8.2E-05	mg/kg/day	7.2E-01	mg/kg/day	5.9E-05	NA		NA		NA
										Exp. Route Total	7.9E-05					0.0E+00
										Exposure Point Total	3.4E-04					0.0E+00
										Exposure Medium Total	3.4E-04					0.0E+00
	Groundwater Air Group 4	Upper Aquifer - Plume 1 Water Vapors at Showerhead	Inhalation	Benzene	4.6E+03	µg/m^3	2.7E+00	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	2.1E-05	NA		NA		NA
				cis-1,2-Dichloroethene	3.6E+05	µg/m^3	2.0E+02	µg/m^3	NA		NA	NA		NA		NA
				trans-1,2-Dichloroethene	1.1E+04	µg/m^3	6.5E+00	µg/m^3	NA		NA	NA		NA		NA
				Trichloroethene	3.1E+05	µg/m^3	1.8E+02	µg/m^3	2.0E-06	(µg/m^3)$^{-1}$	3.5E-04	NA		NA		NA
				Vinyl chloride	6.4E+04	µg/m^3	3.6E+01	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.6E-04	NA		NA		NA
										Exp. Route Total	5.4E-04					0.0E+00
										Exposure Medium Total	5.4E-04					0.0E+00
										Groundwater Group 4 Total	8.7E-04					0.0E+00

TABLE H 7.9.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 5	Upper Castle-Hayne	Ingestion	Benzene	4.5E-01	µg/L	6.7E-06	mg/kg/day	5.5E-02	mg/kg/day	3.7E-07	NA		NA		NA
		Aquifer - Plume 2		cis-1,2-Dichloroethene	3.0E+01	µg/L	4.5E-04	mg/kg/day	NA		NA	NA		NA		NA
		Tap Water		Tetrachloroethene	2.8E-01	µg/L	4.2E-06	mg/kg/day	5.4E-01	mg/kg/day	2.3E-06	NA		NA		NA
				trans-1,2-Dichloroethene	2.1E+00	µg/L	3.1E-05	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.4E+02	µg/L	2.1E-03	mg/kg/day	5.9E-03	mg/kg/day	1.2E-05	NA		NA		NA
				Vinyl chloride	3.8E-01	µg/L	5.6E-06	mg/kg/day	7.2E-01	mg/kg/day	4.1E-06	NA		NA		NA
										Exp. Route Total	1.9E-05					0.0E+00
			Dermal Absorption[2]	Benzene	4.5E-01	µg/L	1.0E-06	mg/kg/day	5.5E-02	mg/kg/day	5.6E-08	NA		NA		NA
				cis-1,2-Dichloroethene	3.0E+01	µg/L	4.0E-05	mg/kg/day	NA		NA	NA		NA		NA
				Tetrachloroethene	2.8E-01	µg/L	2.5E-06	mg/kg/day	5.4E-01	mg/kg/day	1.3E-06	NA		NA		NA
				trans-1,2-Dichloroethene	2.1E+00	µg/L	2.7E-06	mg/kg/day	NA		NA	NA		NA		NA
				Trichloroethene	1.4E+02	µg/L	3.5E-04	mg/kg/day	5.9E-03	mg/kg/day	2.0E-06	NA		NA		NA
				Vinyl chloride	3.8E-01	µg/L	3.0E-07	mg/kg/day	7.2E-01	mg/kg/day	2.2E-07	NA		NA		NA
										Exp. Route Total	3.6E-06					0.0E+00
										Exposure Point Total	2.3E-05					0.0E+00
										Exposure Medium Total	2.3E-05					0.0E+00
	Groundwater Air Group 5	Upper Aquifer - Plume 2	Inhalation	Benzene	2.7E+01	µg/m^3	1.6E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	1.2E-07	NA		NA		NA
		Water Vapors at Showerhead		cis-1,2-Dichloroethene	1.6E+03	µg/m^3	9.0E-01	µg/m^3	NA		NA	NA		NA		NA
				Tetrachloroethene	1.2E+01	µg/m^3	6.7E-03	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	4.0E-08	NA		NA		NA
				trans-1,2-Dichloroethene	1.1E+02	µg/m^3	6.1E-02	µg/m^3	NA		NA	NA		NA		NA
				Trichloroethene	1.2E+03	µg/m^3	7.1E-01	µg/m^3	2.0E-06	(µg/m^3)$^{-1}$	1.4E-06	NA		NA		NA
				Vinyl chloride												
										Exp. Route Total	1.6E-06					0.0E+00
										Exposure Medium Total	1.6E-06					0.0E+00
										Groundwater Group 5 Total	2.4E-05					0.0E+00
										Total of Receptor Risks Across All Media	4.1E-03	Total of Receptor Hazards Across All Media				0.0E+00

Notes:

* Soil = combined surface and subsurface soil

1. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.
2. DAevent for dermal exposure to groundwater calculated on Tables H 7.7.RME and 7.8.RME Supplements A-E.
3. Inhalation exposures calculated on Tables H 7.7.RME and H 7.8.RME Supplements F-J.
4. See Table H 7.9.RME Supplement A for calculation of intake and cancer risk following MMOA method.

TABLE H 7.9.RME SUPPLEMENT A

Calculation of Chemical Cancer Risks for COPC With Mutagenic Mode of Action—Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations										
							Intake					CSF/Unit Risk					Cancer Risk
							Value				Units	Value				Units	
					Value	Units	0-2 years	2-6 years	6-16 years	16-30 years		0-2 years (ADAF=10)	2-6 years (ADAF=3)	6-16 years (ADAF=3)	16-30 years (ADAF=1)		
Soil	Soil	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	3.5E-08	7.0E-08	1.9E-08	2.6E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	4.7E-07
				Benzo(a)pyrene	7.3E-02	mg/kg	2.7E-08	5.3E-08	1.4E-08	2.0E-08	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	3.6E-06
				Benzo(b)fluoranthene	9.9E-02	mg/kg	3.6E-08	7.3E-08	1.9E-08	2.7E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	4.9E-07
				Benzo(k)fluoranthene	7.1E-02	mg/kg	2.6E-08	5.2E-08	1.4E-08	2.0E-08	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	3.5E-08
				Chrysene	1.1E-01	mg/kg	3.9E-08	7.7E-08	2.1E-08	2.9E-08	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	5.2E-09
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	2.1E-08	4.1E-08	1.1E-08	1.5E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	2.8E-07
				Chromium	1.5E+01	mg/kg	5.4E-06	1.1E-05	2.9E-06	4.1E-06	mg/kg/day	5.0E+00	1.5E+00	1.5E+00	5.0E-01	1/(mg/kg-day)	5.0E-05
			Dermal	Benzo(a)anthracene	9.5E-02	mg/kg	6.3E-08	1.3E-07	1.4E-07	1.9E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.2E-06
				Benzo(a)pyrene	7.3E-02	mg/kg	4.8E-08	9.7E-08	1.1E-07	1.5E-07	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	9.1E-06
				Benzo(b)fluoranthene	9.9E-02	mg/kg	6.6E-08	1.3E-07	1.4E-07	2.0E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.2E-06
				Benzo(k)fluoranthene	7.1E-02	mg/kg	4.8E-08	9.5E-08	1.0E-07	1.5E-07	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	8.9E-08
				Chrysene	1.1E-01	mg/kg	7.0E-08	1.4E-07	1.5E-07	2.2E-07	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	1.3E-08
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	3.8E-08	7.5E-08	8.2E-08	1.1E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	7.0E-07
				Chromium	1.5E+01	mg/kg	7.6E-08	1.5E-07	1.7E-07	2.3E-07	mg/kg/day	1.3E-01	3.8E-02	3.8E-02	1.3E-02	1/(mg/kg-day)	2.4E-08
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	1.2E-11	2.5E-11	6.2E-11	5.1E-11	mg/kg/day	8.4E-01	2.5E-01	2.5E-01	8.4E-02	1/(mg/kg-day)	1.7E-11
Soil	Soil	Soil* in Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	1.8E-08	3.5E-08	9.5E-09	1.3E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	2.4E-07
				Benzo(a)pyrene	6.1E-02	mg/kg	2.2E-08	4.5E-08	1.2E-08	1.7E-08	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	3.0E-06
				Benzo(b)fluoranthene	7.5E-02	mg/kg	2.7E-08	5.5E-08	1.5E-08	2.1E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	3.7E-07
				Benzo(k)fluoranthene	5.4E-02	mg/kg	2.0E-08	3.9E-08	1.1E-08	1.5E-08	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	2.6E-08
				Chrysene	5.8E-02	mg/kg	2.1E-08	4.2E-08	1.1E-08	1.6E-08	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	2.8E-09
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.1E-09	2.2E-09	6.0E-10	8.4E-10	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	1.5E-07
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	1.6E-08	3.2E-08	8.6E-09	1.2E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	2.2E-07
				Chromium	3.4E+01	mg/kg	1.3E-05	2.5E-05	6.7E-06	9.4E-06	mg/kg/day	5.0E+00	1.5E+00	1.5E+00	5.0E-01	1/(mg/kg-day)	1.1E-04
			Dermal	Benzo(a)anthracene	4.8E-02	mg/kg	3.2E-08	6.4E-08	7.0E-08	9.8E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	6.0E-07
				Benzo(a)pyrene	6.1E-02	mg/kg	4.1E-08	8.1E-08	8.8E-08	1.2E-07	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	7.6E-06
				Benzo(b)fluoranthene	7.5E-02	mg/kg	5.0E-08	1.0E-07	1.1E-07	1.5E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	9.3E-07
				Benzo(k)fluoranthene	5.4E-02	mg/kg	3.6E-08	7.2E-08	7.8E-08	1.1E-07	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	6.7E-08
				Chrysene	5.8E-02	mg/kg	3.8E-08	7.7E-08	8.4E-08	1.2E-07	mg/kg/day	7.3E-02	2.2E-02	2.2E-02	7.3E-03	1/(mg/kg-day)	7.2E-09
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	2.0E-09	4.1E-09	4.5E-09	6.2E-09	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	3.8E-07
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	2.9E-08	5.9E-08	6.4E-08	9.0E-08	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	5.5E-07
				Chromium	3.4E+01	mg/kg	1.8E-07	3.5E-07	3.8E-07	5.4E-07	mg/kg/day	1.3E-01	3.8E-02	3.8E-02	1.3E-02	1/(mg/kg-day)	5.6E-08
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	2.9E-11	5.8E-11	1.4E-10	1.2E-10	mg/kg/day	8.4E-01	2.5E-01	2.5E-01	8.4E-02	1/(mg/kg-day)	3.9E-11
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Benzo(a)pyrene	2.0E-01	µg/L	3.7E-07	7.3E-07	7.8E-07	1.1E-06	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	6.8E-05
				Benzo(b)fluoranthene	3.8E-01	µg/L	6.9E-07	1.4E-06	1.5E-06	2.1E-06	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.3E-05
				Benzo(k)fluoranthene	3.1E-01	µg/L	5.7E-07	1.1E-06	1.2E-06	1.7E-06	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	1.1E-06
				Dibenz(a,h)anthracene	5.5E-01	µg/L	1.0E-06	2.0E-06	2.2E-06	3.0E-06	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	1.9E-04
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	8.2E-07	1.6E-06	1.8E-06	2.5E-06	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.5E-05
				Chromium	7.6E+01	µg/L	1.4E-04	2.8E-04	3.0E-04	4.2E-04	mg/kg/day	5.0E+00	1.5E+00	1.5E+00	5.0E-01	1/(mg/kg-day)	1.8E-03
			Dermal	Benzo(a)pyrene	2.0E-01	µg/L	7.7E-06	1.5E-05	1.7E-05	2.4E-05	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	1.4E-03
				Benzo(b)fluoranthene	3.8E-01	µg/L	1.5E-05	3.0E-05	3.3E-05	4.6E-05	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	2.8E-04
				Benzo(k)fluoranthene	3.1E-01	µg/L	1.1E-05	2.2E-05	2.5E-05	3.5E-05	mg/kg/day	7.3E-01	2.2E-01	2.2E-01	7.3E-02	1/(mg/kg-day)	2.1E-05
				Dibenz(a,h)anthracene	5.5E-01	µg/L	3.5E-07	7.0E-07	7.8E-07	1.1E-06	mg/kg/day	7.3E+01	2.2E+01	2.2E+01	7.3E+00	1/(mg/kg-day)	6.6E-05
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	8.0E-08	1.6E-07	1.8E-07	2.5E-07	mg/kg/day	7.3E+00	2.2E+00	2.2E+00	7.3E-01	1/(mg/kg-day)	1.5E-06
				Chromium	7.6E+01	µg/L	1.8E-06	3.7E-06	3.1E-06	4.3E-06	mg/kg/day	1.3E-01	3.8E-02	3.8E-02	1.3E-02	1/(mg/kg-day)	5.4E-07

TABLE H 7.10.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	5.3E-09	mg/kg/day	7.3E-01	mg/kg/day	3.9E-09	9.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	4.1E-09	mg/kg/day	7.3E+00	mg/kg/day	3.0E-08	7.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	5.6E-09	mg/kg/day	7.3E-01	mg/kg/day	4.1E-09	9.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	4.0E-09	mg/kg/day	7.3E-02	mg/kg/day	2.9E-10	7.0E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	5.9E-09	mg/kg/day	7.3E-03	mg/kg/day	4.3E-11	1.0E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	3.2E-09	mg/kg/day	7.3E-01	mg/kg/day	2.3E-09	5.5E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	5.8E-04	mg/kg/day	NA		NA	1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.0E-02
				Arsenic	1.5E+00	mg/kg	8.3E-08	mg/kg/day	1.5E+00	mg/kg/day	1.2E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	4.8E-03
				Chromium	1.5E+01	mg/kg	8.3E-07	mg/kg/day	5.0E-01	mg/kg/day	4.2E-07	1.5E-05	mg/kg/day	3.0E-03	mg/kg/day	4.9E-03
				Cobalt	1.5E+00	mg/kg	8.5E-08	mg/kg/day	NA		NA	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.0E-03
				Iron	4.0E+03	mg/kg	2.2E-04	mg/kg/day	NA		NA	3.9E-03	mg/kg/day	7.0E-01	mg/kg/day	5.5E-03
										Exp. Route Total	5.8E-07					3.0E-02
			Dermal Absorption[2]	Benzo(a)anthracene	9.5E-02	mg/kg	4.6E-09	mg/kg/day	7.3E-01	mg/kg/day	3.3E-09	8.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	3.5E-09	mg/kg/day	7.3E+00	mg/kg/day	2.6E-08	6.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	4.8E-09	mg/kg/day	7.3E-01	mg/kg/day	3.5E-09	8.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	3.4E-09	mg/kg/day	7.3E-02	mg/kg/day	2.5E-10	6.0E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	5.1E-09	mg/kg/day	7.3E-03	mg/kg/day	3.7E-11	8.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	2.0E-09	4.7E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	3.8E-06	mg/kg/day	NA		NA	6.7E-05	mg/kg/day	1.0E+00	mg/kg/day	6.7E-05
				Arsenic	1.5E+00	mg/kg	1.6E-08	mg/kg/day	1.5E+00	mg/kg/day	2.5E-08	2.9E-07	mg/kg/day	3.0E-04	mg/kg/day	9.5E-04
				Chromium	1.5E+01	mg/kg	5.5E-09	mg/kg/day	1.3E-02	mg/kg/day	6.9E-11	9.6E-08	mg/kg/day	7.5E-05	mg/kg/day	1.3E-03
				Cobalt	1.5E+00	mg/kg	5.6E-10	mg/kg/day	NA		NA	9.8E-09	mg/kg/day	3.0E-04	mg/kg/day	3.3E-05
				Iron	4.0E+03	mg/kg	1.5E-06	mg/kg/day	NA		NA	2.6E-05	mg/kg/day	7.0E-01	mg/kg/day	3.7E-05
										Exp. Route Total	5.9E-08					2.4E-03
										Exposure Medium Total	6.4E-07					3.3E-02
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	1.4E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	1.2E-08	2.5E-09	mg/kg/day	1.0E-04	mg/m^3	2.5E-05
										Exp. Route Total	1.2E-08					2.5E-05
										Exposure Medium Total	1.2E-08					2.5E-05
										Soil* in Industrial Area Total	6.5E-07					3.3E-02

TABLE H 7.10.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	2.0E-09	4.7E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	3.4E-09	mg/kg/day	7.3E+00	mg/kg/day	2.5E-08	6.0E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	4.2E-09	mg/kg/day	7.3E-01	mg/kg/day	3.1E-09	7.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	3.0E-09	mg/kg/day	7.3E-02	mg/kg/day	2.2E-10	5.3E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	3.2E-09	mg/kg/day	7.3E-03	mg/kg/day	2.4E-11	5.6E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.7E-10	mg/kg/day	7.3E+00	mg/kg/day	1.3E-09	3.0E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	2.5E-09	mg/kg/day	7.3E-01		1.8E-09	4.3E-08	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	1.2E-03	mg/kg/day	NA	mg/kg/day	NA	2.0E-02	mg/kg/day	1.0E+00	mg/kg/day	2.0E-02
				Arsenic	1.1E+01	mg/kg	6.2E-07	mg/kg/day	1.5E+00	mg/kg/day	9.4E-07	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	3.6E-02
				Chromium	3.4E+01	mg/kg	1.9E-06	mg/kg/day	5.0E-01		9.6E-07	3.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.1E-02
				Cobalt	1.5E+00	mg/kg	8.4E-08	mg/kg/day	NA		NA	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	4.9E-03
				Iron	1.4E+04	mg/kg	7.7E-04	mg/kg/day	NA		NA	1.4E-02	mg/kg/day	7.0E-01	mg/kg/day	1.9E-02
				Vanadium	5.9E+01	mg/kg	3.3E-06	mg/kg/day	NA		NA	5.8E-05	mg/kg/day	5.0E-03	mg/kg/day	1.2E-02
										Exp. Route Total	1.9E-06					1.0E-01
			Dermal Absorption[2]	Benzo(a)anthracene	4.8E-02	mg/kg	2.3E-09	mg/kg/day	7.3E-01	mg/kg/day	1.7E-09	4.1E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	2.9E-09	mg/kg/day	7.3E+00	mg/kg/day	2.1E-08	5.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	3.6E-09	mg/kg/day	7.3E-01	mg/kg/day	2.6E-09	6.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	2.6E-09	mg/kg/day	7.3E-02	mg/kg/day	1.9E-10	4.5E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	2.8E-09	mg/kg/day	7.3E-03	mg/kg/day	2.0E-11	4.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.5E-10	mg/kg/day	7.3E+00	mg/kg/day	1.1E-09	2.6E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	1.6E-11	mg/kg/day	7.3E-01		1.2E-11	2.8E-10	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	2.3E-04	mg/kg/day	NA	mg/kg/day	NA	4.0E-03	mg/kg/day	1.0E+00	mg/kg/day	4.0E-03
				Arsenic	1.1E+01	mg/kg	4.1E-09	mg/kg/day	1.5E+00	mg/kg/day	6.2E-09	7.2E-08	mg/kg/day	3.0E-04	mg/kg/day	2.4E-04
				Chromium	3.4E+01	mg/kg	1.3E-08	mg/kg/day	1.3E-02		1.6E-10	2.2E-07	mg/kg/day	7.5E-05	mg/kg/day	3.0E-03
				Cobalt	1.5E+00	mg/kg	5.6E-10	mg/kg/day	NA		NA	9.7E-09	mg/kg/day	3.0E-04	mg/kg/day	3.2E-05
				Iron	1.4E+04	mg/kg	5.1E-06	mg/kg/day	NA		NA	8.9E-05	mg/kg/day	7.0E-01	mg/kg/day	1.3E-04
				Vanadium	5.9E+01	mg/kg	2.2E-08	mg/kg/day	NA		NA	3.8E-07	mg/kg/day	1.3E-04	mg/kg/day	2.9E-03
										Exp. Route Total	3.3E-08					1.0E-02
										Exposure Medium Total	2.0E-06					1.1E-01
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	3.3E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	2.8E-08	5.8E-09	mg/kg/day	1.0E-04	mg/m^3	5.8E-05
										Exp. Route Total	2.8E-08					5.8E-05
										Exposure Medium Total	2.8E-08					5.8E-05
										Soil* in Flight Line Area Total	2.0E-06					1.1E-01

TABLE H 7.10.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	3.8E-07	mg/kg/day	NA		NA	6.7E-06	mg/kg/day	7.0E-01	mg/kg/day	9.6E-06
										Exp. Route Total	0.0E+00					9.6E-06
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	2.2E-07	mg/kg/day	NA		NA	3.8E-06	mg/kg/day	7.0E-01	mg/kg/day	5.5E-06
										Exp. Route Total	0.0E+00					5.5E-06
										Exposure Point Total	0.0E+00					1.5E-05
										Exposure Medium Total	0.0E+00					1.5E-05
										Surface Water in Pond Total	0.0E+00					1.5E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	4.0E-11	mg/kg/day	7.3E-01	mg/kg/day	2.9E-11	7.0E-10	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.1E-11	mg/kg/day	7.3E+00	mg/kg/day	3.7E-10	8.9E-10	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.0E-10	mg/kg/day	7.3E-01	mg/kg/day	7.4E-11	1.8E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	8.3E-11	mg/kg/day	7.3E-02	mg/kg/day	6.1E-12	1.5E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.1E-10	mg/kg/day	7.3E-03	mg/kg/day	8.0E-13	1.9E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.0E-11	mg/kg/day	7.3E+00	mg/kg/day	1.5E-10	3.5E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	7.8E-11	mg/kg/day	7.3E-01	mg/kg/day	5.7E-11	1.4E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	7.2E-09	mg/kg/day	1.5E+00	mg/kg/day	1.1E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.2E-04
				Chromium	1.4E+01	mg/kg	3.7E-08	mg/kg/day	5.0E-01	mg/kg/day	1.9E-08	6.5E-07	mg/kg/day	3.0E-03	mg/kg/day	2.2E-04
				Iron	7.2E+03	mg/kg	1.9E-05	mg/kg/day	NA		NA	3.4E-04	mg/kg/day	7.0E-01	mg/kg/day	4.8E-04
										Exp. Route Total	3.0E-08					1.1E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	1.8E-10	mg/kg/day	7.3E-01	mg/kg/day	1.3E-10	3.1E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	2.3E-10	mg/kg/day	7.3E+00	mg/kg/day	1.7E-09	4.0E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	4.5E-10	mg/kg/day	7.3E-01	mg/kg/day	3.3E-10	7.9E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	3.7E-10	mg/kg/day	7.3E-02	mg/kg/day	2.7E-11	6.5E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	4.9E-10	mg/kg/day	7.3E-03	mg/kg/day	3.6E-12	8.6E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	8.9E-11	mg/kg/day	7.3E+00	mg/kg/day	6.5E-10	1.6E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	3.5E-10	mg/kg/day	7.3E-01	mg/kg/day	2.5E-10	6.1E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	7.4E-09	mg/kg/day	1.5E+00	mg/kg/day	1.1E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.3E-04
				Chromium	1.4E+01	mg/kg	1.3E-09	mg/kg/day	1.3E-02	mg/kg/day	1.6E-11	2.2E-08	mg/kg/day	7.5E-05	mg/kg/day	3.0E-04
				Iron	7.2E+03	mg/kg	6.6E-07	mg/kg/day	NA		NA	1.1E-05	mg/kg/day	7.0E-01	mg/kg/day	1.6E-05
										Exp. Route Total	1.4E-08					7.5E-04
										Exposure Point Total	4.4E-08					1.9E-03
										Exposure Medium Total	4.4E-08					1.9E-03
										Sediment in Pond Total	4.4E-08					1.9E-03
										Total of Receptor Risks Across All Media	2.7E-06	Total of Receptor Hazards Across All Media				1.5E-01

Notes:

1. Dermal absorption from surface water calculated on Table 7.1.RME Supplement A.
2. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

TABLE H 7.11.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	3.3E-08	mg/kg/day	7.3E-01	mg/kg/day	2.4E-08	9.3E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	2.5E-08	mg/kg/day	7.3E+00	mg/kg/day	1.9E-07	7.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	3.5E-08	mg/kg/day	7.3E-01	mg/kg/day	2.5E-08	9.7E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	2.5E-08	mg/kg/day	7.3E-02	mg/kg/day	1.8E-09	7.0E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	3.7E-08	mg/kg/day	7.3E-03	mg/kg/day	2.7E-10	1.0E-07	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	2.0E-08	mg/kg/day	7.3E-01	mg/kg/day	1.4E-08	5.5E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	3.6E-03	mg/kg/day	NA		NA	1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.0E-02
				Arsenic	1.5E+00	mg/kg	5.2E-07	mg/kg/day	1.5E+00	mg/kg/day	7.7E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	4.8E-03
				Chromium	1.5E+01	mg/kg	5.2E-06	mg/kg/day	5.0E-01	mg/kg/day	2.6E-06	1.5E-05	mg/kg/day	3.0E-03	mg/kg/day	4.9E-03
				Cobalt	1.5E+00	mg/kg	5.3E-07	mg/kg/day	NA		NA	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.0E-03
				Iron	4.0E+03	mg/kg	1.4E-03	mg/kg/day	NA		NA	3.9E-03	mg/kg/day	7.0E-01	mg/kg/day	5.5E-03
										Exp. Route Total	3.6E-06					3.0E-02
			Dermal Absorption[1]	Benzo(a)anthracene	9.5E-02	mg/kg	2.9E-08	mg/kg/day	7.3E-01	mg/kg/day	2.1E-08	8.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	2.2E-08	mg/kg/day	7.3E+00	mg/kg/day	1.6E-07	6.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	3.0E-08	mg/kg/day	7.3E-01	mg/kg/day	2.2E-08	8.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	2.1E-08	mg/kg/day	7.3E-02	mg/kg/day	1.6E-09	6.0E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	3.2E-08	mg/kg/day	7.3E-03	mg/kg/day	2.3E-10	8.9E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	1.7E-08	mg/kg/day	7.3E-01	mg/kg/day	1.2E-08	4.7E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	2.4E-05	mg/kg/day	NA		NA	6.7E-05	mg/kg/day	1.0E+00	mg/kg/day	6.7E-05
				Arsenic	1.5E+00	mg/kg	1.0E-07	mg/kg/day	1.5E+00	mg/kg/day	1.5E-07	2.9E-07	mg/kg/day	3.0E-04	mg/kg/day	9.5E-04
				Chromium	1.5E+01	mg/kg	3.4E-08	mg/kg/day	1.3E-02	mg/kg/day	4.3E-10	9.6E-08	mg/kg/day	7.5E-05	mg/kg/day	1.3E-03
				Cobalt	1.5E+00	mg/kg	3.5E-09	mg/kg/day	NA		NA	9.8E-09	mg/kg/day	3.0E-04	mg/kg/day	3.3E-05
				Iron	4.0E+03	mg/kg	9.1E-06	mg/kg/day	NA		NA	2.6E-05	mg/kg/day	7.0E-01	mg/kg/day	3.7E-05
										Exp. Route Total	3.7E-07					2.4E-03
										Exposure Medium Total	4.0E-06					3.3E-02
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	8.9E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	7.5E-08	2.5E-09	mg/kg/day	1.0E-04	mg/m^3	2.5E-05
										Exp. Route Total	7.5E-08					2.5E-05
										Exposure Medium Total	7.5E-08					2.5E-05
										Soil* in Industrial Area Total	4.1E-06					3.3E-02

TABLE H 7.11.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Flght Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	1.7E-08	mg/kg/day	7.3E-01	mg/kg/day	1.2E-08	4.7E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	2.1E-08	mg/kg/day	7.3E+00	mg/kg/day	1.6E-07	6.0E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	2.6E-08	mg/kg/day	7.3E-01	mg/kg/day	1.9E-08	7.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	1.9E-08	mg/kg/day	7.3E-02	mg/kg/day	1.4E-09	5.3E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	2.0E-08	mg/kg/day	7.3E-03	mg/kg/day	1.5E-10	5.6E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.1E-09	mg/kg/day	7.3E+00	mg/kg/day	7.8E-09	3.0E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	1.5E-08	mg/kg/day	7.3E-01		1.1E-08	4.3E-08	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	7.2E-03	mg/kg/day	NA	mg/kg/day	NA	2.0E-02	mg/kg/day	1.0E+00	mg/kg/day	2.0E-02
				Arsenic	1.1E+01	mg/kg	3.9E-06	mg/kg/day	1.5E+00	mg/kg/day	5.8E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	3.6E-02
				Chromium	3.4E+01	mg/kg	1.2E-05	mg/kg/day	5.0E-01		6.0E-06	3.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.1E-02
				Cobalt	1.5E+00	mg/kg	5.3E-07	mg/kg/day	NA		NA	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	4.9E-03
				Iron	1.4E+04	mg/kg	4.8E-03	mg/kg/day	NA		NA	1.4E-02	mg/kg/day	7.0E-01	mg/kg/day	1.9E-02
				Vanadium	5.9E+01	mg/kg	2.1E-05	mg/kg/day	NA		NA	5.8E-05	mg/kg/day	5.0E-03	mg/kg/day	1.2E-02
										Exp. Route Total	1.2E-05					1.0E-01
			Dermal Absorption[1]	Benzo(a)anthracene	4.8E-02	mg/kg	1.5E-08	mg/kg/day	7.3E-01	mg/kg/day	1.1E-08	4.1E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	1.8E-08	mg/kg/day	7.3E+00	mg/kg/day	1.3E-07	5.1E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	2.2E-08	mg/kg/day	7.3E-01	mg/kg/day	1.6E-08	6.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	1.6E-08	mg/kg/day	7.3E-02	mg/kg/day	1.2E-09	4.5E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	1.7E-08	mg/kg/day	7.3E-03	mg/kg/day	1.3E-10	4.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	9.2E-10	mg/kg/day	7.3E+00	mg/kg/day	6.7E-09	2.6E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	1.0E-10	mg/kg/day	7.3E-01		7.4E-11	2.8E-10	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	1.4E-03	mg/kg/day	NA	mg/kg/day	NA	4.0E-03	mg/kg/day	1.0E+00	mg/kg/day	4.0E-03
				Arsenic	1.1E+01	mg/kg	2.6E-08	mg/kg/day	1.5E+00	mg/kg/day	3.9E-08	7.2E-08	mg/kg/day	3.0E-04	mg/kg/day	2.4E-04
				Chromium	3.4E+01	mg/kg	7.9E-08	mg/kg/day	1.3E-02		9.9E-10	2.2E-07	mg/kg/day	7.5E-05	mg/kg/day	3.0E-03
				Cobalt	1.5E+00	mg/kg	3.5E-09	mg/kg/day	NA		NA	9.7E-09	mg/kg/day	3.0E-04	mg/kg/day	3.2E-05
				Iron	1.4E+04	mg/kg	3.2E-05	mg/kg/day	NA		NA	8.9E-05	mg/kg/day	7.0E-01	mg/kg/day	1.3E-04
				Vanadium	5.9E+01	mg/kg	1.4E-07	mg/kg/day	NA		NA	3.8E-07	mg/kg/day	1.3E-04	mg/kg/day	2.9E-03
										Exp. Route Total	2.1E-07					1.0E-02
										Exposure Medium Total	1.2E-05					1.1E-01
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	2.1E-09	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	1.7E-07	5.8E-09	mg/kg/day	1.0E-04	mg/m^3	5.8E-05
										Exp. Route Total	1.7E-07					5.8E-05
										Exposure Medium Total	1.7E-07					5.8E-05
										Soil* in Flight Line Area Total	1.2E-05					1.1E-01

TABLE H 7.11.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 1	Surficial Aquifer - Tap Water	Ingestion	1,1-Dichloroethane	7.9E-01	µg/L	2.8E-06	mg/kg/day	5.7E-03	mg/kg/day	1.6E-08	7.7E-06	mg/kg/day	2.0E-01	mg/kg/day	3.9E-05
				2-Hexanone	1.4E+01	µg/L	4.9E-05	mg/kg/day	NA	mg/kg/day	NA	1.4E-04	mg/kg/day	5.0E-03	mg/kg/day	2.7E-02
				Benzene	2.3E+00	µg/L	7.9E-06	mg/kg/day	5.5E-02	mg/kg/day	4.4E-07	2.2E-05	mg/kg/day	4.0E-03	mg/kg/day	5.5E-03
				Chloroform	6.9E-01	µg/L	2.4E-06	mg/kg/day	3.1E-02	mg/kg/day	7.5E-08	6.8E-06	mg/kg/day	1.0E-02	mg/kg/day	6.8E-04
				cis-1,2-Dichloroethene	3.6E+01	µg/L	1.3E-04	mg/kg/day	NA		NA	3.5E-04	mg/kg/day	1.0E-02	mg/kg/day	3.5E-02
				Dichlorodifluoromethane (Freon-12)	6.5E+00	µg/L	2.3E-05	mg/kg/day	NA		NA	6.3E-05	mg/kg/day	2.0E-01	mg/kg/day	3.2E-04
				Ethylbenzene	9.2E-01	µg/L	3.2E-06	mg/kg/day	1.1E-02	mg/kg/day	3.5E-08	9.0E-06	mg/kg/day	1.0E-01	mg/kg/day	9.0E-05
				Tetrachloroethene	1.9E+02	µg/L	6.6E-04	mg/kg/day	5.4E-01	mg/kg/day	3.6E-04	1.9E-03	mg/kg/day	1.0E-02	mg/kg/day	1.9E-01
				Trichloroethene	4.5E+01	µg/L	1.6E-04	mg/kg/day	5.9E-03	mg/kg/day	9.3E-07	4.4E-04	mg/kg/day	NA		NA
				Vinyl chloride	1.0E+01	µg/L	3.5E-05	mg/kg/day	7.2E-01	mg/kg/day	2.5E-05	9.7E-05	mg/kg/day	3.0E-03	mg/kg/day	3.2E-02
				Naphthalene	1.9E-01	µg/L	6.6E-07	mg/kg/day	NA		NA	1.9E-06	mg/kg/day	2.0E-02	mg/kg/day	9.3E-05
				Antimony	3.4E+00	µg/L	1.2E-05	mg/kg/day	NA		NA	3.3E-05	mg/kg/day	4.0E-04	mg/kg/day	8.3E-02
				Iron	5.3E+03	µg/L	1.9E-02	mg/kg/day	NA		NA	5.2E-02	mg/kg/day	7.0E-01	mg/kg/day	7.4E-02
										Exp. Route Total	3.9E-04					4.4E-01
										Groundwater Group 1 Total	3.9E-04					4.4E-01
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Tetrachloroethene	2.4E+00	µg/L	8.4E-06	mg/kg/day	5.4E-01	mg/kg/day	4.5E-06	2.3E-05	mg/kg/day	1.0E-02	mg/kg/day	2.3E-03
										Exp. Route Total	4.5E-06					2.3E-03
										Groundwater Group 2 Total	4.5E-06					2.3E-03
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Ingestion	Chloroform	3.8E-01	µg/L	1.3E-06	mg/kg/day	3.1E-02	mg/kg/day	4.1E-08	3.7E-06	mg/kg/day	1.0E-02	mg/kg/day	3.7E-04
				Benzo(a)pyrene	2.0E-01	µg/L	7.0E-07	mg/kg/day	7.3E+00	mg/kg/day	5.1E-06	2.0E-06	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-01	µg/L	1.3E-06	mg/kg/day	7.3E-01	mg/kg/day	9.7E-07	3.7E-06	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-01	µg/L	1.1E-06	mg/kg/day	7.3E-02	mg/kg/day	7.9E-08	3.0E-06	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	5.5E-01	µg/L	1.9E-06	mg/kg/day	7.3E+00	mg/kg/day	1.4E-05	5.4E-06	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.5E-01	µg/L	1.6E-06	mg/kg/day	7.3E-01	mg/kg/day	1.1E-06	4.4E-06	mg/kg/day	NA		NA
				Chromium	7.6E+01	µg/L	2.7E-04	mg/kg/day	5.0E-01	mg/kg/day	1.3E-04	7.4E-04	mg/kg/day	3.0E-03	mg/kg/day	2.5E-01
										Exp. Route Total	1.5E-04					2.5E-01
										Groundwater Group 3 Total	1.5E-04					2.5E-01

TABLE H 7.11.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater Group 4	Upper Castle-Hayne	Ingestion	Benzene	1.8E+00	µg/L	6.3E-06	mg/kg/day	5.5E-02	mg/kg/day	3.5E-07	1.8E-05	mg/kg/day	4.0E-03	mg/kg/day	4.4E-03
		Aquifer - Plume 1		cis-1,2-Dichloroethene	1.6E+02	µg/L	5.6E-04	mg/kg/day	NA		NA	1.6E-03	mg/kg/day	1.0E-02	mg/kg/day	1.6E-01
		Tap Water		trans-1,2-Dichloroethene	5.2E+00	µg/L	1.8E-05	mg/kg/day	NA		NA	5.1E-05	mg/kg/day	2.0E-02	mg/kg/day	2.5E-03
				Trichloroethene	1.6E+02	µg/L	5.5E-04	mg/kg/day	5.9E-03	mg/kg/day	3.2E-06	1.5E-03	mg/kg/day	NA		NA
				Vinyl chloride	2.3E+01	µg/L	7.9E-05	mg/kg/day	7.2E-01	mg/kg/day	5.7E-05	2.2E-04	mg/kg/day	3.0E-03	mg/kg/day	7.4E-02
										Exp. Route Total	6.0E-05					2.4E-01
										Groundwater Group 4 Total	6.0E-05					2.4E-01
Groundwater	Groundwater Group 5	Upper Castle-Hayne	Ingestion	Benzene	4.5E-01	µg/L	1.6E-06	mg/kg/day	5.5E-02	mg/kg/day	8.6E-08	4.4E-06	mg/kg/day	4.0E-03	mg/kg/day	1.1E-03
		Aquifer - Plume 2		cis-1,2-Dichloroethene	3.0E+01	µg/L	1.1E-04	mg/kg/day	NA		NA	3.0E-04	mg/kg/day	1.0E-02	mg/kg/day	3.0E-02
		Tap Water		Tetrachloroethene	2.8E-01	µg/L	9.8E-07	mg/kg/day	5.4E-01	mg/kg/day	5.3E-07	2.7E-06	mg/kg/day	1.0E-02	mg/kg/day	2.7E-04
				trans-1,2-Dichloroethene	2.1E+00	µg/L	7.2E-06	mg/kg/day	NA		NA	2.0E-05	mg/kg/day	2.0E-02	mg/kg/day	1.0E-03
				Trichloroethene	1.4E+02	µg/L	4.9E-04	mg/kg/day	5.9E-03	mg/kg/day	2.9E-06	1.4E-03	mg/kg/day	NA		NA
				Vinyl chloride	3.8E-01	µg/L	1.3E-06	mg/kg/day	7.2E-01	mg/kg/day	9.5E-07	3.7E-06	mg/kg/day	3.0E-03	mg/kg/day	1.2E-03
										Exp. Route Total	4.5E-06					3.3E-02
										Groundwater Group 5 Total	4.5E-06					3.3E-02
										Total of Receptor Risks Across All Media	4.0E-04	Total of Receptor Hazards Across All Media				5.9E-01

Notes:

1. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

TABLE H 7.12.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	6.6E-09	mg/kg/day	7.3E-01	mg/kg/day	4.9E-09	1.9E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	5.1E-09	mg/kg/day	7.3E+00	mg/kg/day	3.7E-08	1.5E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	6.9E-09	mg/kg/day	7.3E-01	mg/kg/day	5.1E-09	2.0E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	5.0E-09	mg/kg/day	7.3E-02	mg/kg/day	3.6E-10	1.5E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	7.4E-09	mg/kg/day	7.3E-03	mg/kg/day	5.4E-11	2.2E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	3.9E-09	mg/kg/day	7.3E-01	mg/kg/day	2.9E-09	1.1E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	7.2E-04	mg/kg/day	NA		NA	2.1E-03	mg/kg/day	1.0E+00	mg/kg/day	2.1E-03
				Arsenic	1.5E+00	mg/kg	1.0E-07	mg/kg/day	1.5E+00	mg/kg/day	1.5E-07	3.0E-07	mg/kg/day	3.0E-04	mg/kg/day	1.0E-03
				Chromium	1.5E+01	mg/kg	1.0E-06	mg/kg/day	5.0E-01	mg/kg/day	5.2E-07	3.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.0E-03
				Cobalt	1.5E+00	mg/kg	1.1E-07	mg/kg/day	NA		NA	3.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.0E-03
				Iron	4.0E+03	mg/kg	2.8E-04	mg/kg/day	NA		NA	8.1E-04	mg/kg/day	7.0E-01	mg/kg/day	1.2E-03
										Exp. Route Total	7.2E-07					6.3E-03
			Dermal Absorption[2]	Benzo(a)anthracene	9.5E-02	mg/kg	3.4E-09	mg/kg/day	7.3E-01	mg/kg/day	2.5E-09	1.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	2.6E-09	mg/kg/day	7.3E+00	mg/kg/day	1.9E-08	7.7E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	3.6E-09	mg/kg/day	7.3E-01	mg/kg/day	2.6E-09	1.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	2.6E-09	mg/kg/day	7.3E-02	mg/kg/day	1.9E-10	7.5E-09	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	3.8E-09	mg/kg/day	7.3E-03	mg/kg/day	2.8E-11	1.1E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	2.0E-09	mg/kg/day	7.3E-01	mg/kg/day	1.5E-09	6.0E-09	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	2.9E-06	mg/kg/day	NA		NA	8.4E-06	mg/kg/day	1.0E+00	mg/kg/day	8.4E-06
				Arsenic	1.5E+00	mg/kg	1.2E-08	mg/kg/day	1.5E+00	mg/kg/day	1.8E-08	3.6E-08	mg/kg/day	3.0E-04	mg/kg/day	1.2E-04
				Chromium	1.5E+01	mg/kg	4.1E-09	mg/kg/day	1.3E-02	mg/kg/day	5.2E-11	1.2E-08	mg/kg/day	7.5E-05	mg/kg/day	1.6E-04
				Cobalt	1.5E+00	mg/kg	4.2E-10	mg/kg/day	NA		NA	1.2E-09	mg/kg/day	3.0E-04	mg/kg/day	4.1E-06
				Iron	4.0E+03	mg/kg	1.1E-06	mg/kg/day	NA		NA	3.2E-06	mg/kg/day	7.0E-01	mg/kg/day	4.6E-06
										Exp. Route Total	4.5E-08					3.0E-04
										Exposure Medium Total	7.7E-07					6.6E-03
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	4.5E-11	mg/kg/day	8.4E-02	(µg/m3)-1	3.7E-09	1.3E-10	mg/kg/day	1.0E-04	mg/m^3	1.3E-06
										Exp. Route Total	3.7E-09					1.3E-06
										Exposure Medium Total	3.7E-09					1.3E-06
										Soil* in Industrial Area Total	7.7E-07					6.6E-03

TABLE H 7.12.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Flight Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	3.4E-09	mg/kg/day	7.3E-01	mg/kg/day	2.5E-09	9.9E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	4.3E-09	mg/kg/day	7.3E+00	mg/kg/day	3.1E-08	1.2E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	5.2E-09	mg/kg/day	7.3E-01	mg/kg/day	3.8E-09	1.5E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	3.8E-09	mg/kg/day	7.3E-02	mg/kg/day	2.7E-10	1.1E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	4.0E-09	mg/kg/day	7.3E-03	mg/kg/day	2.9E-11	1.2E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	2.1E-10	mg/kg/day	7.3E+00	mg/kg/day	1.6E-09	6.2E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	3.1E-09	mg/kg/day	7.3E-01		2.2E-09	9.0E-09	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	1.4E-03	mg/kg/day	NA	mg/kg/day	NA	4.2E-03	mg/kg/day	1.0E+00	mg/kg/day	4.2E-03
				Arsenic	1.1E+01	mg/kg	7.8E-07	mg/kg/day	1.5E+00	mg/kg/day	1.2E-06	2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	7.6E-03
				Chromium	3.4E+01	mg/kg	2.4E-06	mg/kg/day	5.0E-01		1.2E-06	7.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.3E-03
				Cobalt	1.5E+00	mg/kg	1.0E-07	mg/kg/day	NA		NA	3.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.0E-03
				Iron	1.4E+04	mg/kg	9.7E-04	mg/kg/day	NA		NA	2.8E-03	mg/kg/day	7.0E-01	mg/kg/day	4.0E-03
				Vanadium	5.9E+01	mg/kg	4.1E-06	mg/kg/day	NA		NA	1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.4E-03
										Exp. Route Total	2.4E-06					2.2E-02
			Dermal Absorption[2]	Benzo(a)anthracene	4.8E-02	mg/kg	1.8E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	5.1E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	2.2E-09	mg/kg/day	7.3E+00	mg/kg/day	1.6E-08	6.4E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	2.0E-09	7.9E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	2.0E-09	mg/kg/day	7.3E-02	mg/kg/day	1.4E-10	5.7E-09	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	2.1E-09	mg/kg/day	7.3E-03	mg/kg/day	1.5E-11	6.1E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.1E-10	mg/kg/day	7.3E+00	mg/kg/day	8.1E-10	3.2E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	1.2E-11	mg/kg/day	7.3E-01		9.0E-12	3.6E-11	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	1.7E-04	mg/kg/day	NA	mg/kg/day	NA	5.0E-04	mg/kg/day	1.0E+00	mg/kg/day	5.0E-04
				Arsenic	1.1E+01	mg/kg	3.1E-09	mg/kg/day	1.5E+00	mg/kg/day	4.7E-09	9.1E-09	mg/kg/day	3.0E-04	mg/kg/day	3.0E-05
				Chromium	3.4E+01	mg/kg	9.5E-09	mg/kg/day	1.3E-02		1.2E-10	2.8E-08	mg/kg/day	7.5E-05	mg/kg/day	3.7E-04
				Cobalt	1.5E+00	mg/kg	4.2E-10	mg/kg/day	NA		NA	1.2E-09	mg/kg/day	3.0E-04	mg/kg/day	4.1E-06
				Iron	1.4E+04	mg/kg	3.9E-06	mg/kg/day	NA		NA	1.1E-05	mg/kg/day	7.0E-01	mg/kg/day	1.6E-05
				Vanadium	5.9E+01	mg/kg	1.6E-08	mg/kg/day	NA		NA	4.8E-08	mg/kg/day	1.3E-04	mg/kg/day	3.7E-04
										Exp. Route Total	2.5E-08					1.3E-03
										Exposure Medium Total	2.4E-06					2.3E-02
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	1.0E-10	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	8.6E-09	3.0E-10	mg/kg/day	1.0E-04	mg/m^3	3.0E-06
										Exp. Route Total	8.6E-09					3.0E-06
										Exposure Medium Total	8.6E-09					3.0E-06
										Soil* in Flight Line Area Total	2.4E-06					2.3E-02

TABLE H 7.12.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	1.0E-05	mg/kg/day	NA		NA	2.9E-05	mg/kg/day	7.0E-01	mg/kg/day	4.2E-05
										Exp. Route Total	0.0E+00					4.2E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	1.0E-09	mg/kg/day	NA		NA	3.8E-06	mg/kg/day	7.0E-01	mg/kg/day	5.5E-06
										Exp. Route Total	0.0E+00					5.5E-06
										Exposure Point Total	0.0E+00					4.7E-05
										Exposure Medium Total	0.0E+00					4.7E-05
										Surface Water in Pond Total	0.0E+00					4.7E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	1.0E-09	mg/kg/day	7.3E-01	mg/kg/day	7.6E-10	3.1E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	1.3E-09	mg/kg/day	7.3E+00	mg/kg/day	9.7E-09	3.9E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	2.7E-09	mg/kg/day	7.3E-01	mg/kg/day	1.9E-09	7.7E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	2.2E-09	mg/kg/day	7.3E-02	mg/kg/day	1.6E-10	6.3E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	2.9E-09	mg/kg/day	7.3E-03	mg/kg/day	2.1E-11	8.3E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	5.2E-10	mg/kg/day	7.3E+00	mg/kg/day	3.8E-09	1.5E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	2.0E-09	mg/kg/day	7.3E-01	mg/kg/day	1.5E-09	5.9E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.9E-07	mg/kg/day	1.5E+00	mg/kg/day	2.8E-07	5.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.8E-03
				Chromium	1.4E+01	mg/kg	9.6E-07	mg/kg/day	5.0E-01	mg/kg/day	4.8E-07	2.8E-06	mg/kg/day	3.0E-03	mg/kg/day	9.4E-04
				Iron	7.2E+03	mg/kg	5.0E-04	mg/kg/day	NA		NA	1.5E-03	mg/kg/day	7.0E-01	mg/kg/day	2.1E-03
										Exp. Route Total	7.8E-07					4.8E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	4.7E-09	mg/kg/day	7.3E-01	mg/kg/day	3.4E-09	1.4E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.9E-09	mg/kg/day	7.3E+00	mg/kg/day	4.3E-08	1.7E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.6E-09	3.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	9.6E-09	mg/kg/day	7.3E-02	mg/kg/day	7.0E-10	2.8E-08	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.3E-08	mg/kg/day	7.3E-03	mg/kg/day	9.3E-11	3.7E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.3E-09	mg/kg/day	7.3E+00	mg/kg/day	1.7E-08	6.8E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	9.0E-09	mg/kg/day	7.3E-01	mg/kg/day	6.6E-09	2.6E-08	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.9E-07	mg/kg/day	1.5E+00	mg/kg/day	2.9E-07	5.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.9E-03
				Chromium	1.4E+01	mg/kg	3.3E-08	mg/kg/day	1.3E-02	mg/kg/day	4.1E-10	9.6E-08	mg/kg/day	7.5E-05	mg/kg/day	1.3E-03
				Iron	7.2E+03	mg/kg	1.7E-05	mg/kg/day	NA		NA	5.0E-05	mg/kg/day	7.0E-01	mg/kg/day	7.1E-05
										Exp. Route Total	3.7E-07					3.2E-03
										Exposure Point Total	1.2E-06					8.1E-03
										Exposure Medium Total	1.2E-06					8.1E-03
										Sediment in Pond Total	1.2E-06					8.1E-03
										Total of Receptor Risks Across All Media	4.4E-06	Total of Receptor Hazards Across All Media				3.8E-02

Notes:

1. Dermal absorption from surface water calculated on Table H 7.1.RME Supplement A.
2. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

TABLE H 7.13.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Industrial Area	Ingestion	Benzo(a)anthracene	9.5E-02	mg/kg	4.3E-09	mg/kg/day	7.3E-01	mg/kg/day	3.1E-09	3.0E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	3.3E-09	mg/kg/day	7.3E+00	mg/kg/day	2.4E-08	2.3E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	4.5E-09	mg/kg/day	7.3E-01	mg/kg/day	3.3E-09	3.1E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	3.2E-09	mg/kg/day	7.3E-02	mg/kg/day	2.4E-10	2.3E-08	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	4.8E-09	mg/kg/day	7.3E-03	mg/kg/day	3.5E-11	3.4E-08	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	2.6E-09	mg/kg/day	7.3E-01	mg/kg/day	1.9E-09	1.8E-08	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	4.7E-04	mg/kg/day	NA		NA	3.3E-03	mg/kg/day	1.0E+00	mg/kg/day	3.3E-03
				Arsenic	1.5E+00	mg/kg	6.7E-08	mg/kg/day	1.5E+00	mg/kg/day	1.0E-07	4.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.6E-03
				Chromium	1.5E+01	mg/kg	6.7E-07	mg/kg/day	5.0E-01	mg/kg/day	3.4E-07	4.7E-06	mg/kg/day	3.0E-03	mg/kg/day	1.6E-03
				Cobalt	1.5E+00	mg/kg	6.9E-08	mg/kg/day	NA		NA	4.8E-07	mg/kg/day	3.0E-04	mg/kg/day	1.6E-03
				Iron	4.0E+03	mg/kg	1.8E-04	mg/kg/day	NA		NA	1.3E-03	mg/kg/day	7.0E-01	mg/kg/day	1.8E-03
										Exp. Route Total	4.7E-07					9.8E-03
			Dermal Absorption[2]	Benzo(a)anthracene	9.5E-02	mg/kg	9.4E-10	mg/kg/day	7.3E-01	mg/kg/day	6.9E-10	6.6E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	7.3E-02	mg/kg	7.2E-10	mg/kg/day	7.3E+00	mg/kg/day	5.3E-09	5.0E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	9.9E-02	mg/kg	9.8E-10	mg/kg/day	7.3E-01	mg/kg/day	7.2E-10	6.9E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	7.1E-02	mg/kg	7.1E-10	mg/kg/day	7.3E-02	mg/kg/day	5.2E-11	4.9E-09	mg/kg/day	NA		NA
				Chrysene	1.1E-01	mg/kg	1.0E-09	mg/kg/day	7.3E-03	mg/kg/day	7.6E-12	7.3E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	5.6E-02	mg/kg	5.6E-10	mg/kg/day	7.3E-01	mg/kg/day	4.1E-10	3.9E-09	mg/kg/day	NA		NA
				Aluminum	1.0E+04	mg/kg	7.9E-07	mg/kg/day	NA		NA	5.5E-06	mg/kg/day	1.0E+00	mg/kg/day	5.5E-06
				Arsenic	1.5E+00	mg/kg	3.4E-09	mg/kg/day	1.5E+00	mg/kg/day	5.0E-09	2.4E-08	mg/kg/day	3.0E-04	mg/kg/day	7.9E-05
				Chromium	1.5E+01	mg/kg	1.1E-09	mg/kg/day	1.3E-02	mg/kg/day	1.4E-11	7.9E-09	mg/kg/day	7.5E-05	mg/kg/day	1.1E-04
				Cobalt	1.5E+00	mg/kg	1.2E-10	mg/kg/day	NA		NA	8.1E-10	mg/kg/day	3.0E-04	mg/kg/day	2.7E-06
				Iron	4.0E+03	mg/kg	3.0E-07	mg/kg/day	NA		NA	2.1E-06	mg/kg/day	7.0E-01	mg/kg/day	3.0E-06
										Exp. Route Total	1.2E-08					2.0E-04
										Exposure Medium Total	4.8E-07					1.0E-02
	Air	Emissions from Soil* in Industrial Area	Inhalation	Chromium	1.1E-08	mg/m^3	1.9E-11	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	1.6E-09	1.3E-10	mg/kg/day	1.0E-04	mg/m^3	1.3E-06
										Exp. Route Total	1.6E-09					1.3E-06
										Exposure Medium Total	1.6E-09					1.3E-06
										Soil* in Industrial Area Total	4.8E-07					1.0E-02

TABLE H 7.13.RME
Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil*	Soil*	Soil* in Flght Line Area	Ingestion	Benzo(a)anthracene	4.8E-02	mg/kg	2.2E-09	mg/kg/day	7.3E-01	mg/kg/day	1.6E-09	1.5E-08	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	2.8E-09	mg/kg/day	7.3E+00	mg/kg/day	2.0E-08	1.9E-08	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	3.4E-09	mg/kg/day	7.3E-01	mg/kg/day	2.5E-09	2.4E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	2.4E-09	mg/kg/day	7.3E-02	mg/kg/day	1.8E-10	1.7E-08	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	2.6E-09	mg/kg/day	7.3E-03	mg/kg/day	1.9E-11	1.8E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.4E-10	mg/kg/day	7.3E+00	mg/kg/day	1.0E-09	9.7E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	2.0E-09	mg/kg/day	7.3E-01		1.5E-09	1.4E-08	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	9.4E-04	mg/kg/day	NA	mg/kg/day	NA	6.6E-03	mg/kg/day	1.0E+00	mg/kg/day	6.6E-03
				Arsenic	1.1E+01	mg/kg	5.0E-07	mg/kg/day	1.5E+00	mg/kg/day	7.6E-07	3.5E-06	mg/kg/day	3.0E-04	mg/kg/day	1.2E-02
				Chromium	3.4E+01	mg/kg	1.6E-06	mg/kg/day	5.0E-01		7.8E-07	1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	3.6E-03
				Cobalt	1.5E+00	mg/kg	6.8E-08	mg/kg/day	NA		NA	4.8E-07	mg/kg/day	3.0E-04	mg/kg/day	1.6E-03
				Iron	1.4E+04	mg/kg	6.3E-04	mg/kg/day	NA		NA	4.4E-03	mg/kg/day	7.0E-01	mg/kg/day	6.3E-03
				Vanadium	5.9E+01	mg/kg	2.7E-06	mg/kg/day	NA		NA	1.9E-05	mg/kg/day	5.0E-03	mg/kg/day	3.7E-03
										Exp. Route Total	1.6E-06					3.4E-02
			Dermal Absorption[2]	Benzo(a)anthracene	4.8E-02	mg/kg	3.1E-10	mg/kg/day	7.3E-01	mg/kg/day	2.2E-10	2.2E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	6.1E-02	mg/kg	3.9E-10	mg/kg/day	7.3E+00	mg/kg/day	2.8E-09	2.7E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	7.5E-02	mg/kg	4.8E-10	mg/kg/day	7.3E-01	mg/kg/day	3.5E-10	3.3E-09	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	5.4E-02	mg/kg	3.4E-10	mg/kg/day	7.3E-02	mg/kg/day	2.5E-11	2.4E-09	mg/kg/day	NA		NA
				Chrysene	5.8E-02	mg/kg	3.7E-10	mg/kg/day	7.3E-03	mg/kg/day	2.7E-12	2.6E-09	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	3.1E-03	mg/kg	1.9E-11	mg/kg/day	7.3E+00	mg/kg/day	1.4E-10	1.4E-10	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	4.4E-02	mg/kg	2.2E-12	mg/kg/day	7.3E-01		1.6E-12	1.5E-11	mg/kg/day	NA	mg/kg/day	NA
				Aluminum	2.1E+04	mg/kg	3.0E-05	mg/kg/day	NA	mg/kg/day	NA	2.1E-04	mg/kg/day	1.0E+00	mg/kg/day	2.1E-04
				Arsenic	1.1E+01	mg/kg	5.4E-10	mg/kg/day	1.5E+00	mg/kg/day	8.2E-10	3.8E-09	mg/kg/day	3.0E-04	mg/kg/day	1.3E-05
				Chromium	3.4E+01	mg/kg	1.7E-09	mg/kg/day	1.3E-02		2.1E-11	1.2E-08	mg/kg/day	7.5E-05	mg/kg/day	1.6E-04
				Cobalt	1.5E+00	mg/kg	7.3E-11	mg/kg/day	NA		NA	5.1E-10	mg/kg/day	3.0E-04	mg/kg/day	1.7E-06
				Iron	1.4E+04	mg/kg	6.8E-07	mg/kg/day	NA		NA	4.7E-06	mg/kg/day	7.0E-01	mg/kg/day	6.8E-06
				Vanadium	5.9E+01	mg/kg	2.9E-09	mg/kg/day	NA		NA	2.0E-08	mg/kg/day	1.3E-04	mg/kg/day	1.6E-04
										Exp. Route Total	4.4E-09					5.5E-04
										Exposure Medium Total	1.6E-06					3.4E-02
	Air	Emissions from Soil* in Flight Line Area	Inhalation	Chromium	2.5E-08	mg/m^3	4.3E-11	mg/kg/day	8.4E-02	$(\mu g/m^3)^{-1}$	3.6E-09	3.0E-10	mg/kg/day	1.0E-04	mg/m^3	3.0E-06
										Exp. Route Total	3.6E-09					3.0E-06
										Exposure Medium Total	3.6E-09					3.0E-06
										Soil* in Flight Line Area Total	1.6E-06					3.4E-02

TABLE H 7.13.RME

Calculation of Chemical Cancer Risks and Non-cancer Hazards – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Pond	Ingestion	Iron	7.1E+02	µg/L	6.5E-06	mg/kg/day	NA		NA	4.5E-05	mg/kg/day	7.0E-01	mg/kg/day	6.5E-05
										Exp. Route Total	0.0E+00					6.5E-05
			Dermal Absorption[1]	Iron	7.1E+02	µg/L	2.6E-06	mg/kg/day	NA		NA	3.8E-06	mg/kg/day	7.0E-01	mg/kg/day	5.5E-06
										Exp. Route Total	0.0E+00					5.5E-06
										Exposure Point Total	0.0E+00					7.0E-05
										Exposure Medium Total	0.0E+00					7.0E-05
										Surface Water in Pond Total	0.0E+00					7.0E-05
Sediment	Sediment	Pond	Ingestion	Benzo(a)anthracene	1.5E-02	mg/kg	6.8E-10	mg/kg/day	7.3E-01	mg/kg/day	5.0E-10	4.7E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	8.6E-10	mg/kg/day	7.3E+00	mg/kg/day	6.3E-09	6.0E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.7E-09	mg/kg/day	7.3E-01	mg/kg/day	1.3E-09	1.2E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	1.4E-09	mg/kg/day	7.3E-02	mg/kg/day	1.0E-10	9.8E-09	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.9E-09	mg/kg/day	7.3E-03	mg/kg/day	1.4E-11	1.3E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	3.4E-10	mg/kg/day	7.3E+00	mg/kg/day	2.5E-09	2.4E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	1.3E-09	mg/kg/day	7.3E-01	mg/kg/day	9.6E-10	9.2E-09	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.2E-07	mg/kg/day	1.5E+00	mg/kg/day	1.8E-07	8.5E-07	mg/kg/day	3.0E-04	mg/kg/day	2.8E-03
				Chromium	1.4E+01	mg/kg	6.2E-07	mg/kg/day	5.0E-01	mg/kg/day	3.1E-07	4.4E-06	mg/kg/day	3.0E-03	mg/kg/day	1.5E-03
				Iron	7.2E+03	mg/kg	3.2E-04	mg/kg/day	NA		NA	2.3E-03	mg/kg/day	7.0E-01	mg/kg/day	3.2E-03
										Exp. Route Total	5.1E-07					7.5E-03
			Dermal Absorption[2]	Benzo(a)anthracene	1.5E-02	mg/kg	4.7E-09	mg/kg/day	7.3E-01	mg/kg/day	3.4E-09	5.3E-09	mg/kg/day	NA		NA
				Benzo(a)pyrene	1.9E-02	mg/kg	5.9E-09	mg/kg/day	7.3E+00	mg/kg/day	4.3E-08	6.7E-09	mg/kg/day	NA		NA
				Benzo(b)fluoranthene	3.8E-02	mg/kg	1.2E-08	mg/kg/day	7.3E-01	mg/kg/day	8.6E-09	1.3E-08	mg/kg/day	NA		NA
				Benzo(k)fluoranthene	3.1E-02	mg/kg	9.6E-09	mg/kg/day	7.3E-02	mg/kg/day	7.0E-10	1.1E-08	mg/kg/day	NA		NA
				Chrysene	4.1E-02	mg/kg	1.3E-08	mg/kg/day	7.3E-03	mg/kg/day	9.3E-11	1.5E-08	mg/kg/day	NA		NA
				Dibenz(a,h)anthracene	7.5E-03	mg/kg	2.3E-09	mg/kg/day	7.3E+00	mg/kg/day	1.7E-08	2.7E-09	mg/kg/day	NA		NA
				Indeno(1,2,3-cd)pyrene	2.9E-02	mg/kg	9.0E-09	mg/kg/day	7.3E-01	mg/kg/day	6.6E-09	1.0E-08	mg/kg/day	NA		NA
				Arsenic	2.7E+00	mg/kg	1.9E-07	mg/kg/day	1.5E+00	mg/kg/day	2.9E-07	2.2E-07	mg/kg/day	3.0E-04	mg/kg/day	7.4E-04
				Chromium	1.4E+01	mg/kg	3.3E-08	mg/kg/day	1.3E-02	mg/kg/day	4.1E-10	3.8E-08	mg/kg/day	7.5E-05	mg/kg/day	5.0E-04
				Iron	7.2E+03	mg/kg	1.7E-05	mg/kg/day	NA		NA	1.9E-05	mg/kg/day	7.0E-01	mg/kg/day	2.8E-05
										Exp. Route Total	3.7E-07					1.3E-03
										Exposure Point Total	8.8E-07					8.8E-03
										Exposure Medium Total	8.8E-07					8.8E-03
										Sediment in Pond Total	8.8E-07					8.8E-03
										Total of Receptor Risks Across All Media	2.9E-06	Total of Receptor Hazards Across All Media				5.3E-02

Notes:

1. Dermal absorption from surface water calculated on Table H 7.1.RME Supplement A.
2. Dermal absorption factors (DABs) used to calculated dermal absorption intake from soil are chemical specific as shown in RAGS Part E, Exhibit 3-4. DABS of 0.13 used for PAHs, 0.03 used for arsenic,0.001 for all other metals.

TABLE H 9.1.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Benzo(a)anthracene	6.7E-09	NA	5.8E-09	1.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	5.1E-08	NA	4.4E-08	9.4E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	6.6E-09	NA	5.6E-09	1.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	5.1E-10	NA	4.4E-10	9.5E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	7.5E-11	NA	6.4E-11	1.4E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	3.9E-08	NA	3.4E-08	7.3E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	5.3E-03	NA	3.5E-05	5.4E-03
			Arsenic	1.5E-07	NA	2.9E-08	1.8E-07	Skin, Vascular	5.7E-03	NA	1.1E-03	6.9E-03
			Chromium	3.5E-07	NA	5.8E-11	3.5E-07	Not identified	4.1E-03	NA	1.1E-03	5.2E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.0E-03	NA	4.0E-05	6.0E-03
			Chemical Total	6.1E-07	0.0E+00	1.2E-07	7.2E-07		2.1E-02	0.0E+00	2.3E-03	2.3E-02
		Exposure Point Total					7.2E-07					2.3E-02
	Exposure Medium Total						7.2E-07					2.3E-02
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	1.0E-08	NA	1.0E-08	Respiratory System	NA	2.1E-05	NA	2.1E-05
			Chemical Total	0.0E+00	1.0E-08	0.0E+00	1.0E-08		0.0E+00	2.1E-05	0.0E+00	2.1E-05
		Exposure Point Total					1.0E-08					2.1E-05
	Exposure Medium Total						1.0E-08					2.1E-05
Surface Soil In Industrial Area Total							7.3E-07					2.3E-02
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.6E-06	NA	5.5E-06	1.5E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		9.6E-06	NA	5.5E-06	1.5E-05
		Exposure Point Total					0.0E+00					1.5E-05
	Exposure Medium Total						0.0E+00					1.5E-05
Surface Water in Pond Total							0.0E+00					1.5E-05

TABLE H 9.1.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	2.9E-11	NA	1.3E-10	1.6E-10	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.7E-10	NA	1.7E-09	2.0E-09	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	7.4E-11	NA	3.3E-10	4.1E-10	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.1E-12	NA	2.7E-11	3.3E-11	NA	NA	NA	NA	0.0E+00
			Chrysene	8.0E-13	NA	3.6E-12	4.4E-12	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.5E-10	NA	6.5E-10	8.0E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.7E-11	NA	2.5E-10	3.1E-10	NA	NA	NA	NA	0.0E+00
			Arsenic	1.1E-08	NA	1.1E-08	2.2E-08	Skin, Vascular	4.2E-04	NA	4.3E-04	8.6E-04
			Chromium	1.9E-08	NA	1.6E-11	1.9E-08	Not identified	2.2E-04	NA	3.0E-04	5.1E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.8E-04	NA	1.6E-05	5.0E-04
			Chemical Total	3.0E-08	NA	1.4E-08	4.4E-08		1.1E-03	NA	7.5E-04	1.9E-03
		Exposure Point Total					4.4E-08					1.9E-03
	Exposure Medium Total						4.4E-08					1.9E-03
Sediment in Pond Total							4.4E-08					1.9E-03
Receptor Total							7.8E-07	Receptor HI Total				2.5E-02

Total Neurological HI Across All Media =	5.4E-03
Total Developmental HI Across All Media =	5.4E-03
Total Skin HI Across All Media =	7.7E-03
Total Vascular HI Across All Media =	7.7E-03
Total Thyroid HI Across All Media =	6.0E-03
Total Respiratory System HI Across All Media =	2.1E-05
Total Gastrointestinal HI Across All Media =	5.1E-04

TABLE H 9.2.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Benzo(a)anthracene	4.2E-08	NA	3.6E-08	7.8E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.2E-07	NA	2.7E-07	5.9E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	4.1E-08	NA	3.5E-08	7.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	3.2E-09	NA	2.7E-09	5.9E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	4.7E-10	NA	4.0E-10	8.7E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.5E-07	NA	2.1E-07	4.6E-07	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	5.3E-03	NA	3.5E-05	5.4E-03
			Arsenic	9.2E-07	NA	1.8E-07	1.1E-06	Skin, Vascular	5.7E-03	NA	1.1E-03	6.9E-03
			Chromium	2.2E-06	NA	3.7E-10	2.2E-06	Not identified	4.1E-03	NA	1.1E-03	5.2E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.0E-03	NA	4.0E-05	6.0E-03
			Chemical Total	3.8E-06	0.0E+00	7.4E-07	4.5E-06		2.1E-02	0.0E+00	2.3E-03	2.3E-02
		Exposure Point Total					4.5E-06					2.3E-02
	Exposure Medium Total						4.5E-06					2.3E-02
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	6.4E-07	NA	6.4E-07	Respiratory System	NA	2.1E-04	NA	2.1E-04
			Chemical Total	0.0E+00	6.4E-07	0.0E+00	6.4E-07		0.0E+00	2.1E-04	0.0E+00	2.1E-04
		Exposure Point Total					6.4E-07					2.1E-04
	Exposure Medium Total						6.4E-07					2.1E-04
Surface Soil in Industrial Area Total							5.2E-06					2.4E-02
Receptor Total							5.2E-06	Receptor HI Total				2.4E-02

Total Neurological HI Across All Media =	5.4E-03
Total Developmental HI Across All Media =	5.4E-03
Total Skin HI Across All Media =	6.9E-03
Total Vascular HI Across All Media =	6.9E-03
Total Thyroid HI Across All Media =	6.0E-03
Total Respiratory System HI Across All Media =	2.1E-04

TABLE H 9.3.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Benzo(a)anthracene	8.7E-09	NA	7.5E-09	1.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.6E-08	NA	5.7E-08	1.2E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	8.6E-09	NA	7.3E-09	1.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.7E-10	NA	5.7E-10	1.2E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	9.7E-11	NA	8.3E-11	1.8E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.1E-08	NA	4.4E-08	9.5E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.1E-03	NA	7.3E-06	1.1E-03
			Arsenic	1.9E-07	NA	3.8E-08	2.3E-07	Skin, Vascular	1.2E-03	NA	2.4E-04	1.4E-03
			Chromium	4.6E-07	NA	7.6E-11	4.6E-07	Not identified	8.6E-04	NA	2.3E-04	1.1E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.2E-03	NA	8.2E-06	1.3E-03
			Chemical Total	7.9E-07	0.0E+00	1.5E-07	9.4E-07		4.4E-03	0.0E+00	4.8E-04	4.9E-03
		Exposure Point Total					9.4E-07					4.9E-03
	Exposure Medium Total						9.4E-07					4.9E-03
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	1.3E-08	NA	1.3E-08	Respiratory System	NA	4.4E-06	NA	4.4E-06
			Chemical Total	0.0E+00	1.3E-08	0.0E+00	1.3E-08		0.0E+00	4.4E-06	0.0E+00	4.4E-06
		Exposure Point Total					1.3E-08					4.4E-06
	Exposure Medium Total						1.3E-08					4.4E-06
Surface Soil in Industrial Area Total							9.5E-07					4.9E-03

TABLE H 9.3.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Flight Line Area	Benzo(a)anthracene	9.9E-09	NA	8.5E-09	1.8E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.2E-07	NA	1.0E-07	2.2E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.5E-08	NA	1.3E-08	2.8E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.5E-09	NA	1.3E-09	2.8E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	1.2E-10	NA	1.1E-10	2.3E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	3.6E-09	NA	3.1E-09	6.8E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	9.4E-09	NA	8.1E-09	1.7E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.5E-03	NA	1.7E-05	2.6E-03
			Arsenic	1.0E-07	NA	2.0E-08	1.2E-07	Skin, Vascular	6.3E-04	NA	1.2E-04	7.5E-04
			Chromium	4.5E-07	NA	7.4E-11	4.5E-07	Not identified	8.3E-04	NA	2.2E-04	1.1E-03
			Chemical Total	7.1E-07	0.0E+00	1.6E-07	8.7E-07		4.0E-03	0.0E+00	3.6E-04	4.4E-03
		Exposure Point Total					8.7E-07					4.4E-03
	Exposure Medium Total						8.7E-07					4.4E-03
Surface Soil in Flight Line Area Area Total							8.7E-07					4.4E-03
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.2E-05	NA	1.8E-05	5.0E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		3.2E-05	NA	1.8E-05	5.0E-05
		Exposure Point Total					0.0E+00					5.0E-05
	Exposure Medium Total						0.0E+00					5.0E-05
Surface Water in Pond Total							0.0E+00					5.0E-05
Sediment	Sediment	Pond	Benzo(a)anthracene	3.1E-10	NA	7.9E-10	1.1E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.9E-09	NA	1.0E-08	1.4E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	7.8E-10	NA	2.0E-09	2.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.3E-11	NA	1.6E-10	2.3E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	8.4E-12	NA	2.2E-11	3.0E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.5E-09	NA	3.9E-09	5.5E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.9E-10	NA	1.5E-09	2.1E-09	NA	NA	NA	NA	0.0E+00
			Arsenic	1.1E-07	NA	6.7E-08	1.8E-07	Skin, Vascular	7.0E-04	NA	4.2E-04	1.1E-03
			Chromium	1.9E-07	NA	9.5E-11	1.9E-07	Not identified	3.6E-04	NA	2.9E-04	6.5E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	8.0E-04	NA	1.6E-05	8.2E-04
			Chemical Total	3.1E-07	NA	8.6E-08	4.0E-07		1.9E-03	NA	7.2E-04	2.6E-03
		Exposure Point Total					4.0E-07					2.6E-03
	Exposure Medium Total						4.0E-07					2.6E-03
Sediment in Pond Total							4.0E-07					2.6E-03

TABLE H 9.3.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Drainage Ditch	Benzo(a)anthracene	5.3E-08	NA	1.4E-07	1.9E-07	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	7.4E-07	NA	1.9E-06	2.7E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.5E-07	NA	3.9E-07	5.4E-07	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	4.7E-09	NA	1.2E-08	1.7E-08	NA	NA	NA	NA	0.0E+00
			Chrysene	8.6E-10	NA	2.2E-09	3.1E-09	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.8E-08	NA	4.7E-08	6.5E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	7.1E-08	NA	1.8E-07	2.5E-07	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.2E-03	NA	2.4E-05	1.2E-03
			Antimony	NA	NA	NA	0.0E+00	Longevity, Blood	7.4E-04	NA	9.7E-05	8.3E-04
			Arsenic	2.2E-07	NA	1.3E-07	3.5E-07	Skin, Vascular	1.4E-03	NA	8.2E-04	2.2E-03
			Cadmium	NA	NA	NA	0.0E+00	Blood	9.1E-04	NA	3.6E-04	1.3E-03
			Chromium	4.3E-07	NA	2.1E-10	4.3E-07	Not identified	7.9E-04	NA	6.3E-04	1.4E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.6E-03	NA	3.1E-05	1.6E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.0E-03	NA	4.0E-05	2.1E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	5.8E-04	NA	4.5E-04	1.0E-03
			Chemical Total	1.7E-06	NA	2.8E-06	4.5E-06		9.2E-03	NA	2.4E-03	1.2E-02
		Exposure Point Total					4.5E-06					1.2E-02
	Exposure Medium Total						4.5E-06					1.2E-02
Sediment in Drainage Ditch Total							4.5E-06					1.2E-02
Receptor Total							6.7E-06	Receptor HI Total				2.4E-02

Total Neurological HI Across All Media =	4.9E-03
Total Developmental HI Across All Media =	4.9E-03
Total Skin HI Across All Media =	5.5E-03
Total Vascular HI Across All Media =	5.5E-03
Total Thyroid HI Across All Media =	2.9E-03
Total Respiratory System HI Across All Media =	4.4E-06
Total Gastrointestinal HI Across All Media =	2.9E-03
Total Longevity HI Across All Media =	8.3E-04
Total Blood HI Across All Media =	3.1E-03
Total Hair HI Across All Media =	1.0E-03

TABLE H 9.4.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Benzo(a)anthracene	8.4E-09	NA	4.4E-09	1.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.3E-08	NA	3.3E-08	9.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	8.2E-09	NA	4.3E-09	1.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.4E-10	NA	3.3E-10	9.7E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	9.3E-11	NA	4.8E-11	1.4E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	4.9E-08	NA	2.5E-08	7.5E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.1E-03	NA	4.4E-06	1.1E-03
			Arsenic	1.8E-07	NA	2.2E-08	2.1E-07	Skin, Vascular	1.2E-03	NA	1.4E-04	1.3E-03
			Chromium	4.4E-07	NA	4.4E-11	4.4E-07	Not identified	8.6E-04	NA	1.4E-04	1.0E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.2E-03	NA	5.0E-06	1.3E-03
			Chemical Total	7.6E-07	0.0E+00	8.9E-08	8.5E-07		4.4E-03	0.0E+00	2.9E-04	4.7E-03
		Exposure Point Total					8.5E-07					4.7E-03
	Exposure Medium Total						8.5E-07					4.7E-03
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	3.2E-09	NA	3.2E-09	Respiratory System	NA	1.1E-06	NA	1.1E-06
			Chemical Total	0.0E+00	3.2E-09	0.0E+00	3.2E-09		0.0E+00	1.1E-06	0.0E+00	1.1E-06
		Exposure Point Total					3.2E-09					1.1E-06
	Exposure Medium Total						3.2E-09					1.1E-06
Surface Soil in Industrial Area Total							8.5E-07					4.7E-03

TABLE H 9.4.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Flight Line Area	Benzo(a)anthracene	9.5E-09	NA	4.9E-09	1.4E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.2E-07	NA	6.0E-08	1.8E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.5E-08	NA	7.6E-09	2.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.4E-09	NA	7.4E-10	2.2E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	1.2E-10	NA	6.2E-11	1.8E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	3.5E-09	NA	1.8E-09	5.3E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	9.0E-09	NA	4.7E-09	1.4E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.5E-03	NA	1.0E-05	2.5E-03
			Arsenic	9.7E-08	NA	1.2E-08	1.1E-07	Skin, Vascular	6.3E-04	NA	7.5E-05	7.0E-04
			Chromium	4.3E-07	NA	4.3E-11	4.3E-07	Not identified	8.3E-04	NA	1.3E-04	9.7E-04
			Chemical Total	6.8E-07	0.0E+00	9.1E-08	7.7E-07		4.0E-03	0.0E+00	2.2E-04	4.2E-03
		Exposure Point Total					7.7E-07					4.2E-03
	Exposure Medium Total						7.7E-07					4.2E-03
Surface Soil in Flight Line Area Total							7.7E-07					4.2E-03
Surface Water	Surface Water	Pond	Iron	NA	NA	0.0E+00	0.0E+00	Gastrointestinal	4.2E-05	NA	2.4E-05	6.5E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		4.2E-05	NA	2.4E-05	6.5E-05
		Exposure Point Total					0.0E+00					6.5E-05
	Exposure Medium Total						0.0E+00					6.5E-05
Surface Water in Pond Total							0.0E+00					6.5E-05

TABLE H 9.4.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	7.6E-10	NA	3.4E-09	4.2E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	9.7E-09	NA	4.3E-08	5.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.9E-09	NA	8.6E-09	1.1E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.6E-10	NA	7.0E-10	8.6E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.1E-11	NA	9.3E-11	1.1E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	3.8E-09	NA	1.7E-08	2.1E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.5E-09	NA	6.6E-09	8.0E-09	NA	NA	NA	NA	0.0E+00
			Arsenic	2.8E-07	NA	2.9E-07	5.7E-07	Skin, Vascular	1.8E-03	NA	1.9E-03	3.7E-03
			Chromium	4.8E-07	NA	4.1E-10	4.8E-07	Not identified	9.4E-04	NA	1.3E-03	2.2E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.1E-03	NA	7.1E-05	2.1E-03
			Chemical Total	7.8E-07	NA	3.7E-07	1.2E-06		4.8E-03	NA	3.2E-03	8.1E-03
		Exposure Point Total					1.2E-06					8.1E-03
	Exposure Medium Total						1.2E-06					8.1E-03
Sediment in Pond Total							1.2E-06					8.1E-03
Sediment	Sediment	Drainage Ditch	Benzo(a)anthracene	1.3E-07	NA	5.9E-07	7.2E-07	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.9E-06	NA	8.3E-06	1.0E-05	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.8E-07	NA	1.7E-06	2.1E-06	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.2E-08	NA	5.2E-08	6.3E-08	NA	NA	NA	NA	0.0E+00
			Chrysene	2.1E-09	NA	9.5E-09	1.2E-08	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	4.5E-08	NA	2.0E-07	2.5E-07	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.8E-07	NA	7.8E-07	9.6E-07	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.1E-03	NA	1.1E-04	3.2E-03
			Antimony	NA	NA	NA	0.0E+00	Longevity, Blood	1.9E-03	NA	4.4E-04	2.3E-03
			Arsenic	5.5E-07	NA	5.7E-07	1.1E-06	Skin, Vascular	3.6E-03	NA	3.7E-03	7.3E-03
			Cadmium	NA	NA	NA	0.0E+00	Blood	2.4E-03	NA	1.6E-03	4.0E-03
			Chromium	1.1E-06	NA	9.1E-10	1.1E-06	Not identified	2.1E-03	NA	2.8E-03	4.9E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	4.1E-03	NA	1.4E-04	4.2E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	5.3E-03	NA	1.8E-04	5.5E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	1.5E-03	NA	2.0E-03	3.5E-03
			Chemical Total	4.2E-06	NA	1.2E-05	1.6E-05		2.4E-02	NA	1.1E-02	3.5E-02
		Exposure Point Total					1.6E-05					3.5E-02
	Exposure Medium Total						1.6E-05					3.5E-02
Sediment in Drainage Ditch Total							1.6E-05					3.5E-02

TABLE H 9.4.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water in Drainage Ditch	Benzo(a)anthracene	1.5E-09	NA	1.1E-06	1.1E-06	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.5E-09	NA	4.4E-06	4.4E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	8.5E-10	NA	1.1E-06	1.1E-06	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	6.9E-10	NA	9.0E-07	9.0E-07	NA	NA	NA	NA	0.0E+00
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	2.2E-07	NA	8.8E-06	9.1E-06
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	8.0E-05	NA	4.5E-05	1.3E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.2E-08	NA	1.1E-03	1.1E-03
			Manganese	NA	NA	NA	0.0E+00	CNS	1.9E-05	NA	9.0E-03	9.1E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.7E-01	NA	3.9E-03	2.7E-01
			Chemical Total	6.5E-09	NA	7.6E-06	7.6E-06		2.7E-01	NA	1.4E-02	2.8E-01
		Exposure Point Total					7.6E-06					2.8E-01
	Exposure Medium Total						7.6E-06					2.8E-01
Surface Water in Drainage Ditch Total							7.6E-06					2.8E-01
Receptor Total							2.7E-05	Receptor HI Total				3.3E-01

Notes:
CNS - Central nervous system

Total Neurological HI Across All Media =	1.6E-02
Total Developmental HI Across All Media =	7.0E-03
Total Skin HI Across All Media =	1.3E-02
Total Vascular HI Across All Media =	1.3E-02
Total Thyroid HI Across All Media =	5.5E-03
Total Respiratory System HI Across All Media =	1.1E-06
Total Gastrointestinal HI Across All Media =	8.8E-03
Total Longevity HI Across All Media =	2.3E-03
Total Body Weight HI Across All Media =	9.1E-06
Total Blood HI Across All Media =	2.8E-01
Total Hair HI Across All Media =	2.8E-01

TABLE H 9.5.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Industrial Area	Benzo(a)anthracene	5.4E-09	NA	1.2E-09	6.6E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	4.1E-08	NA	9.0E-09	5.0E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	5.3E-09	NA	1.2E-09	6.5E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	4.1E-10	NA	9.0E-11	5.0E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	6.0E-11	NA	1.3E-11	7.4E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	3.2E-08	NA	7.0E-09	3.9E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.7E-03	NA	2.9E-06	1.7E-03
			Arsenic	1.2E-07	NA	6.0E-09	1.3E-07	Skin, Vascular	1.9E-03	NA	9.4E-05	1.9E-03
			Chromium	2.9E-07	NA	1.2E-11	2.9E-07	Not identified	1.3E-03	NA	9.0E-05	1.4E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.9E-03	NA	3.3E-06	1.9E-03
			Chemical Total	4.9E-07	0.0E+00	2.4E-08	5.1E-07		6.8E-03	0.0E+00	1.9E-04	7.0E-03
		Exposure Point Total					5.1E-07					7.0E-03
	Exposure Medium Total						5.1E-07					7.0E-03
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	1.3E-09	NA	1.3E-09	Respiratory System	NA	1.1E-06	NA	1.1E-06
			Chemical Total	0.0E+00	1.3E-09	0.0E+00	1.3E-09		0.0E+00	1.1E-06	0.0E+00	1.1E-06
		Exposure Point Total					1.3E-09					1.1E-06
	Exposure Medium Total						1.3E-09					1.1E-06
Surface Soil in Industrial Area Total							5.2E-07					7.0E-03

TABLE H 9.5.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil in Flight Line Area	Benzo(a)anthracene	6.2E-09	NA	1.3E-09	7.5E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	7.5E-08	NA	1.6E-08	9.1E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	9.5E-09	NA	2.1E-09	1.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	9.2E-10	NA	2.0E-10	1.1E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	7.7E-11	NA	1.7E-11	9.4E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	2.3E-09	NA	5.0E-10	2.8E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.8E-09	NA	1.3E-09	7.1E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.9E-03	NA	6.3E-06	4.0E-03
			Arsenic	6.3E-08	NA	3.2E-09	6.6E-08	Skin, Vascular	9.8E-04	NA	4.7E-05	1.0E-03
			Chromium	2.8E-07	NA	1.2E-11	2.8E-07	Not identified	1.3E-03	NA	8.3E-05	1.4E-03
			Chemical Total	4.4E-07	0.0E+00	2.5E-08	4.7E-07		6.2E-03	0.0E+00	1.4E-04	6.4E-03
		Exposure Point Total					4.7E-07					6.4E-03
	Exposure Medium Total						4.7E-07					6.4E-03
Surface Soil in Flight Line Area Total							4.7E-07					6.4E-03
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	6.5E-05	NA	2.6E-06	6.7E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		6.5E-05	NA	2.6E-06	6.7E-05
		Exposure Point Total					0.0E+00					6.7E-05
	Exposure Medium Total						0.0E+00					6.7E-05
Surface Water in Pond Total							0.0E+00					6.7E-05

TABLE H 9.5.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	5.0E-10	NA	5.2E-10	1.0E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.3E-09	NA	6.5E-09	1.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.3E-09	NA	1.3E-09	2.6E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.0E-10	NA	1.1E-10	2.1E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	1.4E-11	NA	1.4E-11	2.8E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	2.5E-09	NA	2.6E-09	5.1E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	9.6E-10	NA	1.0E-09	2.0E-09	NA	NA	NA	NA	0.0E+00
			Arsenic	1.8E-07	NA	4.4E-08	2.3E-07	Skin, Vascular	2.8E-03	NA	6.8E-04	3.5E-03
			Chromium	3.1E-07	NA	6.2E-11	3.1E-07	Not Identified	1.5E-03	NA	4.7E-04	1.9E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.2E-03	NA	2.6E-05	3.3E-03
			Chemical Total	5.1E-07	NA	5.6E-08	5.6E-07		7.5E-03	NA	1.2E-03	8.7E-03
		Exposure Point Total					5.6E-07					8.7E-03
	Exposure Medium Total						5.6E-07					8.7E-03
Sediment in Pond Total							5.6E-07					8.7E-03
Sediment	Sediment	Drainage Ditch	Benzo(a)anthracene	8.6E-08	NA	8.9E-08	1.7E-07	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.2E-06	NA	1.3E-06	2.5E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	2.5E-07	NA	2.6E-07	5.0E-07	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	7.6E-09	NA	7.9E-09	1.5E-08	NA	NA	NA	NA	0.0E+00
			Chrysene	1.4E-09	NA	1.4E-09	2.8E-09	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	2.9E-08	NA	3.0E-08	6.0E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.1E-07	NA	1.2E-07	2.3E-07	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	4.9E-03	NA	3.9E-05	4.9E-03
			Antimony	NA	NA	NA	0.0E+00	Longevity, Blood	3.0E-03	NA	1.6E-04	3.1E-03
			Arsenic	3.6E-07	NA	8.6E-08	4.5E-07	Skin, Vascular	5.6E-03	NA	1.3E-03	6.9E-03
			Cadmium	NA	NA	NA	0.0E+00	Blood	3.7E-03	NA	5.9E-04	4.3E-03
			Chromium	6.9E-07	NA	1.4E-10	6.9E-07	Not identified	3.2E-03	NA	1.0E-03	4.2E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.3E-03	NA	5.1E-05	6.4E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	8.2E-03	NA	6.6E-05	8.3E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.4E-03	NA	7.3E-04	3.1E-03
			Chemical Total	2.7E-06	NA	1.8E-06	4.6E-06		3.7E-02	NA	4.0E-03	4.1E-02
		Exposure Point Total					4.6E-06					4.1E-02
	Exposure Medium Total						4.6E-06					4.1E-02
Sediment in Drainage Ditch Total							4.6E-06					4.1E-02

TABLE H 9.5.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Current/Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Surface Water in Drainage Ditch	Benzo(a)anthracene	9.9E-10	NA	5.2E-07	5.2E-07	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	2.2E-09	NA	2.0E-06	2.0E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	5.5E-10	NA	5.0E-07	5.0E-07	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	4.5E-10	NA	4.1E-07	4.1E-07	NA	NA	NA	NA	0.0E+00
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	3.5E-07	NA	9.6E-06	1.0E-05
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.2E-04	NA	5.0E-05	1.7E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.0E-03	NA	1.2E-03	4.2E-03
			Manganese	NA	NA	NA	0.0E+00	CNS	9.9E-04	NA	9.9E-03	1.1E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.8E-04	NA	4.3E-03	4.6E-03
			Chemical Total	4.2E-09	NA	3.4E-06	3.4E-06		4.4E-03	NA	1.5E-02	2.0E-02
		Exposure Point Total					3.4E-06					2.0E-02
	Exposure Medium Total						3.4E-06					2.0E-02
Surface Water in Drainage Ditch Total							3.4E-06					2.0E-02
Receptor Total							9.6E-06	Receptor HI Total				8.3E-02

Notes:
CNS - Central nervous system

Total Neurological HI Across All Media =	2.2E-02
Total Developmental HI Across All Media =	1.1E-02
Total Skin HI Across All Media =	1.3E-02
Total Vascular HI Across All Media =	1.3E-02
Total Thyroid HI Across All Media =	8.3E-03
Total Respiratory System HI Across All Media =	1.1E-06
Total Gastrointestinal HI Across All Media =	1.6E-02
Total Longevity HI Across All Media =	3.1E-03
Total Body Weight HI Across All Media =	1.0E-05
Total Blood HI Across All Media =	1.5E-02
Total Hair HI Across All Media =	7.7E-03

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.2E-05	NA	4.2E-04	4.5E-04
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		3.2E-05	NA	4.2E-04	4.5E-04
		Exposure Point Total					0.0E+00					4.5E-04
	Exposure Medium Total						0.0E+00					4.5E-04
Surface Water in Pond Total							0.0E+00					4.5E-04
Sediment	Sediment	Pond	Benzo(a)anthracene	1.2E-11	NA	3.2E-11	4.4E-11	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.6E-10	NA	4.0E-10	5.5E-10	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.1E-11	NA	8.0E-11	1.1E-10	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.5E-12	NA	6.5E-12	9.0E-12	NA	NA	NA	NA	0.0E+00
			Chrysene	3.3E-13	NA	8.6E-13	1.2E-12	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	6.1E-11	NA	1.6E-10	2.2E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.4E-11	NA	6.1E-11	8.5E-11	NA	NA	NA	NA	0.0E+00
			Arsenic	4.5E-09	NA	2.7E-09	7.2E-09	Skin, Vascular	7.0E-04	NA	4.2E-04	1.1E-03
			Chromium	7.7E-09	NA	3.8E-12	7.7E-09	Not identified	5.4E-05	NA	4.3E-05	9.7E-05
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	8.0E-04	NA	1.6E-05	8.2E-04
			Chemical Total	1.3E-08	NA	3.4E-09	1.6E-08		1.6E-03	NA	4.8E-04	2.0E-03
		Exposure Point Total					1.6E-08					2.0E-03
	Exposure Medium Total						1.6E-08					2.0E-03
Sediment in Pond Total							1.6E-08					2.0E-03

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Drainage Ditch	Benzo(a)anthracene	2.1E-09	NA	5.5E-09	7.6E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.0E-08	NA	7.7E-08	1.1E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	6.1E-09	NA	1.6E-08	2.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.9E-10	NA	4.8E-10	6.7E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	3.4E-11	NA	8.8E-11	1.2E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	7.2E-10	NA	1.9E-09	2.6E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.8E-09	NA	7.3E-09	1.0E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.2E-03	NA	4.2E-05	1.2E-03
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	7.4E-04	NA	1.7E-04	9.1E-04
			Arsenic	8.9E-09	NA	5.3E-09	1.4E-08	Skin, Vascular	1.4E-03	NA	1.4E-03	2.8E-03
			Cadmium	NA	NA	NA	0.0E+00	Blood	9.1E-04	NA	6.3E-04	1.5E-03
			Chromium	1.7E-08	NA	8.4E-12	1.7E-08	Not identified	1.2E-04	NA	1.7E-04	2.8E-04
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.6E-04	NA	5.4E-06	1.6E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.0E-03	NA	7.1E-05	2.1E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	4.2E-04	NA	5.6E-04	9.8E-04
			Chemical Total	6.8E-08	NA	1.1E-07	1.8E-07		7.0E-03	NA	3.1E-03	1.0E-02
		Exposure Point Total					1.8E-07					1.0E-02
	Exposure Medium Total						1.8E-07					1.0E-02
Sediment in Drainage Ditch Total							1.8E-07					1.0E-02

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* from Industrial Area	Benzo(a)anthracene	4.7E-09	NA	8.3E-10	5.5E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.6E-08	NA	6.4E-09	4.2E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	4.9E-09	NA	8.7E-10	5.7E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	3.5E-10	NA	6.3E-11	4.1E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	5.2E-11	NA	9.3E-12	6.1E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.8E-09	NA	4.9E-10	3.3E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	4.9E-02	NA	6.7E-05	4.9E-02
			Arsenic	1.5E-07	NA	6.1E-09	1.5E-07	Skin, Vascular	2.3E-02	NA	9.5E-04	2.4E-02
			Chromium	5.0E-07	NA	1.7E-11	5.0E-07	Not identified	1.4E-01	NA	1.9E-04	1.4E-01
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	2.4E-03	NA	3.3E-06	2.4E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.7E-02	NA	3.7E-05	2.7E-02
			Chemical Total	7.0E-07	0.0E+00	1.5E-08	7.1E-07		2.4E-01	0.0E+00	1.3E-03	2.4E-01
		Exposure Point Total					7.1E-07					2.4E-01
	Exposure Medium Total						7.1E-07					2.4E-01
	Air	Emissions from Surface Soil in Industrial Area	Chromium	NA	3.0E-09	NA	3.0E-09	Respiratory System	NA	2.5E-05	NA	2.5E-05
			Chemical Total	0.0E+00	3.0E-09	0.0E+00	3.0E-09		0.0E+00	2.5E-05	0.0E+00	2.5E-05
		Exposure Point Total					3.0E-09					2.5E-05
	Exposure Medium Total						3.0E-09					2.5E-05
Soil* In Industrial Area Total							7.1E-07					2.4E-01

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* from Flight Line Area	Benzo(a)anthracene	2.4E-09	NA	4.2E-10	2.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.0E-08	NA	5.3E-09	3.5E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.7E-09	NA	6.6E-10	4.3E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.6E-10	NA	4.7E-11	3.1E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.8E-11	NA	5.0E-12	3.3E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.5E-09	NA	2.7E-10	1.8E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.2E-09	NA	3.9E-10	2.5E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	9.7E-02	NA	1.3E-04	9.7E-02
			Arsenic	1.1E-06	NA	4.6E-08	1.2E-06	Skin, Vascular	1.7E-01	NA	7.2E-03	1.8E-01
			Chromium	1.2E-06	NA	4.0E-11	1.2E-06	Not identified	3.2E-01	NA	4.4E-04	3.2E-01
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	2.4E-03	NA	3.2E-06	2.4E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.3E-02	NA	1.3E-04	9.3E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	4.0E-02	NA	2.1E-03	4.2E-02
			Chemical Total	2.3E-06	0.0E+00	5.3E-08	2.4E-06		7.3E-01	0.0E+00	1.0E-02	7.4E-01
		Exposure Point Total					2.4E-06					7.4E-01
	Exposure Medium Total						2.4E-06					7.4E-01
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	1.9E-12	NA	1.9E-12	Respiratory System	NA	5.8E-05	NA	5.8E-05
			Chemical Total	0.0E+00	1.9E-12	0.0E+00	1.9E-12		0.0E+00	5.8E-05	0.0E+00	5.8E-05
		Exposure Point Total					1.9E-12					5.8E-05
	Exposure Medium Total						1.9E-12					5.8E-05
Soil* In Flight Line Area Total							2.4E-06					7.4E-01

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer	1,1-Dichloroethane	NA	NA	1.7E-09	1.7E-09	Kidney	NA	NA	8.4E-07	8.4E-07
		Water in Excavation Pit	2-Hexanone	NA	NA	1.6E-07	1.6E-07	Nervous System	NA	NA	3.1E-04	3.1E-04
			Benzene	NA	NA	1.0E-08	1.0E-08	Blood, Immune	NA	NA	2.5E-04	2.5E-04
			Chloroform	NA	NA	1.6E-10	1.6E-10	Liver	NA	NA	1.6E-05	1.6E-05
			cis-1,2-Dichloroethene	NA	NA	2.2E-07	2.2E-07	Blood	NA	NA	2.1E-02	2.1E-02
			Dichlorodifluoromethane (Freon-12)	NA	NA	2.0E-07	2.0E-07	None Observed	NA	NA	2.1E-06	2.1E-06
			Ethylbenzene	NA	NA	1.4E-08	1.4E-08	Liver, Kidney	NA	NA	1.3E-05	1.3E-05
			Tetrachloroethene	NA	NA	NA	0.0E+00	Liver	NA	NA	2.4E-03	2.4E-03
			Trichloroethene	NA	NA	3.8E-07	3.8E-07	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	2.9E-10	2.9E-10	Liver	NA	NA	5.5E-04	5.5E-04
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	NA	NA	1.4E-05	1.4E-05
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	NA	NA	1.5E-03	1.5E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	NA	NA	2.0E-04	2.0E-04
			Chemical Total	0.0E+00	0.0E+00	9.8E-07	9.8E-07		0.0E+00	0.0E+00	2.6E-02	2.6E-02
		Exposure Point Total					9.8E-07					2.6E-02
	Exposure Medium Total						9.8E-07					2.6E-02

TABLE H 9.6.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 1	Surficial Aquifer Water in Excavation Pit	1,1-Dichloroethane	NA	1.0E-10	NA	1.0E-10	NA	NA	NA	NA	0.0E+00
			2-Hexanone	NA	4.7E-06	NA	4.7E-06	Nervous System	NA	1.3E-04	NA	1.3E-04
			Benzene	NA	1.5E-10	NA	1.5E-10	Blood, Immune	NA	3.2E-05	NA	3.2E-05
			Chloroform	NA	NA	NA	0.0E+00	Liver	NA	9.4E-06	NA	9.4E-06
			cis-1,2-Dichloroethene	NA	1.9E-06	NA	1.9E-06	NA	NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	4.2E-08	NA	4.2E-08	Liver	NA	1.2E-06	NA	1.2E-06
			Ethylbenzene	NA	NA	NA	0.0E+00	Fetus	NA	3.6E-07	NA	3.6E-07
			Tetrachloroethene	NA	2.4E-09	NA	2.4E-09	Kidney, Liver	NA	2.5E-04	NA	2.5E-04
			Trichloroethene	NA	2.7E-08	NA	2.7E-08	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	4.5E-05	NA	4.5E-05
			Naphthalene	NA	NA	NA	0.0E+00	NA	NA	2.2E-05	NA	2.2E-05
			Chemical Total	0.0E+00	6.6E-06	0.0E+00	6.6E-06		0.0E+00	4.9E-04	0.0E+00	4.9E-04
		Exposure Point Total					6.6E-06					4.9E-04
	Exposure Medium Total						6.6E-06					4.9E-04
Groundwater Group 1 Total							7.6E-06					2.7E-02
Receptor Total							1.1E-05	Receptor HI Total				1.0E+00

Notes:

CNS - Central nervous system

Total Gastrointestinal HI Across All Media =	1.2E-01
Total Skin HI Across All Media =	2.1E-01
Total Vascular HI Across All Media =	2.1E-01
Total Neurological HI Across All Media =	1.5E-01
Total Whole Body HI Across All Media =	2.4E-03
Total Blood HI Across All Media =	6.8E-02
Total Thyroid HI Across All Media =	4.9E-03
Total Developmental HI Across All Media =	1.5E-01
Total Hair HI Across All Media =	4.3E-02
Total Respiratory System HI Across All Media =	8.3E-05
Total Kidney HI Across All Media =	2.6E-04
Total Immune System HI Across All Media =	2.8E-04
Total Liver HI Across All Media =	3.2E-03
Total Body Weight HI Across All Media =	1.4E-05
Total Fetus HI Across All Media =	3.6E-07

TABLE H 9.7.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.4E-02	NA	5.7E-05	1.4E-02
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	6.7E-03	NA	8.1E-04	7.5E-03
			Chromium	NA	NA	NA	0.0E+00	Not identified	6.8E-03	NA	1.1E-03	7.9E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.9E-03	NA	2.8E-05	7.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	7.8E-03	NA	3.1E-05	7.8E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		4.2E-02	0.0E+00	2.0E-03	4.4E-02
		Exposure Point Total					0.0E+00					4.4E-02
	Exposure Medium Total						0.0E+00					4.4E-02
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	NA	NA	0.0E+00	Respiratory System	NA	1.0E-04	NA	1.0E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	1.0E-04	0.0E+00	1.0E-04
		Exposure Point Total					0.0E+00					1.0E-04
	Exposure Medium Total						0.0E+00					1.0E-04
Soil* in Industrial Area Total							0.0E+00					4.5E-02

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.8E-02	NA	1.1E-04	2.8E-02
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	5.1E-02	NA	6.1E-03	5.7E-02
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.6E-02	NA	2.5E-03	1.8E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.9E-03	NA	2.7E-05	6.9E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.7E-02	NA	1.1E-04	2.7E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	1.6E-02	NA	2.5E-03	1.9E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.5E-01	0.0E+00	1.1E-02	1.6E-01
		Exposure Point Total					0.0E+00					1.6E-01
	Exposure Medium Total						0.0E+00					1.6E-01
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	NA	NA	0.0E+00	Respiratory System	NA	2.4E-04	NA	2.4E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	2.4E-04	0.0E+00	2.4E-04
		Exposure Point Total					0.0E+00					2.4E-04
	Exposure Medium Total						0.0E+00					2.4E-04
Soil* in Flight Line Area Area Total							0.0E+00					1.6E-01

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	NA	NA	NA	0.0E+00	Kidney	1.1E-04	NA	8.6E-06	1.2E-04
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	7.7E-02	NA	3.2E-03	8.0E-02
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	1.6E-02	NA	2.4E-03	1.8E-02
			Chloroform	NA	NA	NA	0.0E+00	Liver	1.9E-03	NA	1.7E-04	2.1E-03
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	9.9E-02	NA	8.7E-03	1.1E-01
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	8.9E-04	NA	1.1E-04	9.9E-04
			Ethylbenzene	NA	NA	NA	0.0E+00	Liver, Kidney	2.5E-04	NA	1.5E-04	4.0E-04
			Tetrachloroethene	NA	NA	NA	0.0E+00	Liver	5.2E-01	NA	3.1E-01	8.3E-01
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	9.1E-02	NA	4.8E-03	9.6E-02
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	2.6E-04	NA	1.7E-04	4.3E-04
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	2.3E-01	NA	8.1E-03	2.4E-01
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.1E-01	NA	1.1E-03	2.1E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.2E+00	0.0E+00	3.4E-01	1.6E+00
		Exposure Point Total					0.0E+00					1.6E+00
	Exposure Medium Total						0.0E+00					1.6E+00

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 1	Surficial Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	NA	7.4E-03	NA	7.4E-03
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	4.7E-03	NA	4.7E-03
			Chloroform	NA	NA	NA	0.0E+00	Liver	NA	3.4E-04	NA	3.4E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	Liver	NA	1.6E-03	NA	1.6E-03
			Ethylbenzene	NA	NA	NA	0.0E+00	Fetus	NA	4.7E-05	NA	4.7E-05
			Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	3.0E-02	NA	3.0E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	6.8E-03	NA	6.8E-03
			Naphthalene	NA	NA	NA	0.0E+00	NA	NA	2.0E-03	NA	2.0E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	5.3E-02	0.0E+00	5.3E-02
		Exposure Point Total					0.0E+00					5.3E-02
	Exposure Medium Total						0.0E+00					5.3E-02
Groundwater Group 1 Total							0.0E+00					1.6E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	NA	NA	NA	0.0E+00	Liver, Body Weight	6.6E-03	NA	4.0E-03	1.1E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.6E-03	0.0E+00	4.0E-03	1.1E-02
		Exposure Point Total					0.0E+00					1.1E-02
	Exposure Medium Total						0.0E+00					1.1E-02
	Groundwater Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	3.8E-04	NA	3.8E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	3.8E-04	0.0E+00	3.8E-04
		Exposure Point Total					0.0E+00					3.8E-04
	Exposure Medium Total						0.0E+00					3.8E-04
Groundwater Group 2 Total							0.0E+00					1.1E-02

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne	Chloroform	NA	NA	NA	0.0E+00	Liver	1.0E-03	NA	9.5E-05	1.1E-03
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
		Aquifer - Tap Water	Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chromium	NA	NA	NA	0.0E+00	Not identified	6.9E-01	NA	2.9E-01	9.8E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		7.0E-01	0.0E+00	2.9E-01	9.9E-01
		Exposure Point Total					0.0E+00					9.9E-01
	Exposure Medium Total						0.0E+00					9.9E-01
	Groundwater Group 3	Middle Castle-Hayne	Chloroform	NA	NA	NA	0.0E+00	Liver	NA	1.9E-04	NA	1.9E-04
		Water Vapors at Showerhead	Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	1.9E-04	0.0E+00	1.9E-04
		Exposure Point Total					0.0E+00					1.9E-04
	Exposure Medium Total						0.0E+00					1.9E-04
Groundwater Group 3 Total							0.0E+00					9.9E-01
Groundwater	Groundwater Group 4	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	1.2E-02	NA	9.9E-03	2.2E-02
		Plume 1	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	4.4E-01	NA	3.9E-02	4.8E-01
		Tap Water	trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	7.1E-03	NA	3.7E-03	1.1E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	2.1E-01	NA	5.0E-02	2.6E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.7E-01	0.0E+00	1.0E-01	7.7E-01
		Exposure Point Total					0.0E+00					7.7E-01
	Exposure Medium Total						0.0E+00					7.7E-01

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 4	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	3.7E-03	NA	3.7E-03
		Plume 1 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Respiratory System	NA	4.6E-03	NA	4.6E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	1.5E-02	NA	1.5E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	2.4E-02	0.0E+00	2.4E-02
		Exposure Point Total					0.0E+00					2.4E-02
	Exposure Medium Total						0.0E+00					2.4E-02
Groundwater Group 4 Total							0.0E+00					7.9E-01
Groundwater	Groundwater Group 5	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	3.1E-03	NA	4.7E-04	3.6E-03
		Plume 2	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	8.3E-02	NA	7.3E-03	9.1E-02
		Tap Water	Tetrachloroethene	NA	NA	NA	0.0E+00	Liver, Body Weight	7.7E-04	NA	4.6E-04	1.2E-03
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	2.8E-03	NA	2.5E-04	3.1E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	3.5E-03	NA	1.8E-04	3.6E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		9.4E-02	0.0E+00	8.7E-03	1.0E-01
		Exposure Point Total					0.0E+00					1.0E-01
	Exposure Medium Total						0.0E+00					1.0E-01

TABLE H 9.7.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 5	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	9.3E-04	NA	9.3E-04
		Plume 1 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	4.5E-05	NA	4.5E-05
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Respiratory System	NA	1.8E-03	NA	1.8E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	2.6E-04	NA	2.6E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	3.1E-03	0.0E+00	3.1E-03
		Exposure Point Total					0.0E+00					3.1E-03
	Exposure Medium Total						0.0E+00					3.1E-03
Groundwater Group 5 Total							0.0E+00					1.1E-01
Receptor Total							0.0E+00	Receptor HI Total				1.8E+00

Notes:

CNS - Central Nervous System

Total Neurological HI Across All Media =	1.3E-01
Total Developmental HI Across All Media =	4.3E-02
Total Skin HI Across All Media =	6.5E-02
Total Vascular HI Across All Media =	6.5E-02
Total Thyroid HI Across All Media =	1.4E-02
Total Gastrointestinal HI Across All Media =	2.4E-01
Total Respiratory System HI Across All Media =	3.5E-04
Total Hair HI Across All Media =	1.9E-02
Total Blood HI Across All Media =	3.9E-01
Total Kidney HI Across All Media =	3.1E-02
Total Immune HI Across All Media =	2.3E-02
Total Liver HI Across All Media =	9.7E-01
Total Body Weight HI Across All Media =	4.3E-04
Total Whole Body HI Across All Media =	2.4E-01
Total Fetus HI Across all Media =	4.7E-05

TABLE H 9.8.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.3E-01	NA	3.7E-04	1.3E-01
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	6.3E-02	NA	5.3E-03	6.8E-02
			Chromium	NA	NA	NA	0.0E+00	Not identified	6.3E-02	NA	7.1E-03	7.1E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.5E-02	NA	1.8E-04	6.5E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	7.2E-02	NA	2.0E-04	7.3E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		4.0E-01	0.0E+00	1.3E-02	4.1E-01
		Exposure Point Total					0.0E+00					4.1E-01
	Exposure Medium Total						0.0E+00					4.1E-01
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	NA	NA	0.0E+00	Respiratory System	NA	1.0E-04	NA	1.0E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	1.0E-04	0.0E+00	1.0E-04
		Exposure Point Total					0.0E+00					1.0E-04
	Exposure Medium Total						0.0E+00					1.0E-04
Soil* in Industrial Area Total							0.0E+00					4.1E-01

TABLE H 9.8.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.6E-01	NA	7.4E-04	2.7E-01
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	4.8E-01	NA	4.0E-02	5.2E-01
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.5E-01	NA	1.6E-02	1.6E-01
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	6.4E-02	NA	1.8E-04	6.4E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.5E-01	NA	7.1E-04	2.5E-01
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	1.5E-01	NA	1.6E-02	1.7E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.4E+00	0.0E+00	7.4E-02	1.4E+00
		Exposure Point Total					0.0E+00					1.4E+00
	Exposure Medium Total						0.0E+00					1.4E+00
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	NA	NA	0.0E+00	Respiratory System	NA	2.4E-04	NA	2.4E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	2.4E-04	0.0E+00	2.4E-04
		Exposure Point Total					0.0E+00					2.4E-04
	Exposure Medium Total						0.0E+00					2.4E-04
Soil* in Flight Line Area Area Total							0.0E+00					1.4E+00

TABLE H 9.8.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer	1,1-Dichloroethane	NA	NA	NA	0.0E+00	Kidney	2.5E-04	NA	2.0E-05	2.7E-04
		Tap Water	2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	1.8E-01	NA	7.4E-03	1.9E-01
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	3.6E-02	NA	5.6E-03	4.2E-02
			Chloroform	NA	NA	NA	0.0E+00	Liver	4.4E-03	NA	3.9E-04	4.8E-03
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	2.3E-01	NA	2.0E-02	2.5E-01
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	2.1E-03	NA	2.4E-04	2.3E-03
			Ethylbenzene	NA	NA	NA	0.0E+00	Liver, Kidney	5.9E-04	NA	3.4E-04	9.3E-04
			Tetrachloroethene	NA	NA	NA	0.0E+00	Liver	1.2E+00	NA	7.1E-01	1.9E+00
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	2.1E-01	NA	1.2E-02	2.2E-01
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	6.1E-04	NA	3.9E-04	9.9E-04
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	5.4E-01	NA	2.4E-02	5.7E-01
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.8E-01	NA	3.2E-03	4.9E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.9E+00	0.0E+00	7.8E-01	3.7E+00
		Exposure Point Total					0.0E+00					3.7E+00
	Exposure Medium Total						0.0E+00					3.7E+00

TABLE H 9.8.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 1	Surficial Aquifer	1,1-Dichloroethane	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
		Water Vapors at Showerhead	2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	NA	1.9E-02	NA	1.9E-02
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	1.2E-02	NA	1.2E-02
			Chloroform	NA	NA	NA	0.0E+00	Liver	NA	8.5E-04	NA	8.5E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	Liver	NA	4.1E-03	NA	4.1E-03
			Ethylbenzene	NA	NA	NA	0.0E+00	Fetus	NA	1.2E-04	NA	1.2E-04
			Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	7.6E-02	NA	7.6E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	1.7E-02	NA	1.7E-02
			Naphthalene	NA	NA	NA	0.0E+00	NA	NA	5.1E-03	NA	5.1E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	1.3E-01	0.0E+00	1.3E-01
		Exposure Point Total					0.0E+00					1.3E-01
	Exposure Medium Total						0.0E+00					1.3E-01
Groundwater Group 1 Total							0.0E+00					3.8E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	NA	NA	NA	0.0E+00	Liver, Body Weight	1.5E-02	NA	8.9E-03	2.4E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.5E-02	0.0E+00	8.9E-03	2.4E-02
		Exposure Point Total					0.0E+00					2.4E-02
	Exposure Medium Total						0.0E+00					2.4E-02
	Groundwater Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	9.6E-04	NA	9.6E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	9.6E-04	0.0E+00	9.6E-04
		Exposure Point Total					0.0E+00					9.6E-04
	Exposure Medium Total						0.0E+00					9.6E-04
Groundwater Group 2 Total							0.0E+00					2.5E-02

TABLE H 9.8.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne	Chloroform	NA	NA	NA	0.0E+00	Liver	2.4E-03	NA	2.1E-04	2.6E-03
		Aquifer - Tap Water	Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.6E+00	NA	8.6E-01	2.5E+00
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.6E+00	0.0E+00	8.6E-01	2.5E+00
		Exposure Point Total					0.0E+00					2.5E+00
	Exposure Medium Total						0.0E+00					2.5E+00
	Groundwater Group 3	Middle Castle-Hayne	Chloroform	NA	NA	NA	0.0E+00	Liver	NA	4.7E-04	NA	4.7E-04
		Water Vapors at Showerhead	Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	4.7E-04	0.0E+00	4.7E-04
		Exposure Point Total					0.0E+00					4.7E-04
	Exposure Medium Total						0.0E+00					4.7E-04
Groundwater Group 3 Total							0.0E+00					2.5E+00
Groundwater	Groundwater Group 4	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	2.9E-02	NA	2.5E-02	5.3E-02
		Plume 1	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.0E+00	NA	9.0E-02	1.1E+00
		Tap Water	trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.7E-02	NA	1.0E-02	2.7E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	4.8E-01	NA	1.2E-01	6.0E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.6E+00	0.0E+00	2.4E-01	1.8E+00
		Exposure Point Total					0.0E+00					1.8E+00
	Exposure Medium Total						0.0E+00					1.8E+00

TABLE H 9.8.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 4	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	9.3E-03	NA	9.3E-03
		Plume 1 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Respiratory System	NA	1.2E-02	NA	1.2E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	3.9E-02	NA	3.9E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	5.9E-02	0.0E+00	5.9E-02
			Exposure Point Total				0.0E+00					5.9E-02
			Exposure Medium Total				0.0E+00					5.9E-02
			Groundwater Group 4 Total				0.0E+00					1.9E+00
Groundwater	Groundwater Group 5	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	7.2E-03	NA	1.1E-03	8.3E-03
		Plume 2	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.9E-01	NA	1.7E-02	2.1E-01
		Tap Water	Tetrachloroethene	NA	NA	NA	0.0E+00	Liver, Body Weight	1.8E-03	NA	1.0E-03	2.8E-03
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	6.6E-03	NA	5.8E-04	7.2E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	8.1E-03	NA	4.4E-04	8.5E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.2E-01	0.0E+00	2.0E-02	2.4E-01
			Exposure Point Total				0.0E+00					2.4E-01
			Exposure Medium Total				0.0E+00					2.4E-01

TABLE H 9.8.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 5	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	2.3E-03	NA	2.3E-03
		Plume 2 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	1.1E-04	NA	1.1E-04
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Respiratory System	NA	4.6E-03	NA	4.6E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	6.5E-04	NA	6.5E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	7.7E-03	0.0E+00	7.7E-03
		Exposure Point Total					0.0E+00					7.7E-03
	Exposure Medium Total						0.0E+00					7.7E-03
Groundwater Group 5 Total							0.0E+00					2.5E-01
Receptor Total							0.0E+00	Receptor HI Total				5.7E+00

Notes:

CNS - Central nervous system

Total Neurological HI Across All Media =	6.0E-01
Total Developmental HI Across All Media =	4.0E-01
Total Skin HI Across All Media =	5.8E-01
Total Vascular HI Across All Media =	5.8E-01
Total Thyroid HI Across All Media =	1.3E-01
Total Gastrointestinal HI Across All Media =	8.1E-01
Total Respiratory System HI Across All Media =	3.5E-04
Total Hair HI Across All Media =	1.7E-01
Total Blood HI Across All Media =	1.0E+00
Total Kidney HI Across All Media =	7.7E-02
Total Immune HI Across All Media =	5.3E-02
Total Liver HI Across All Media =	2.2E+00
Total Body Weight HI Across All Media =	9.9E-04
Total Whole Body HI Across All Media =	5.7E-01
Total Fetus HI Across all Media =	1.2E-04

TABLE H 9.9.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	4.7E-07	NA	1.2E-06	1.7E-06		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.6E-06	NA	9.1E-06	1.3E-05		NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	4.9E-07	NA	1.2E-06	1.7E-06		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	3.5E-08	NA	8.9E-08	1.2E-07		NA	NA	NA	0.0E+00
			Chrysene	5.2E-09	NA	1.3E-08	1.8E-08		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.8E-07	NA	7.0E-07	9.8E-07		NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Arsenic	3.5E-06	NA	3.3E-07	3.8E-06		NA	NA	NA	0.0E+00
			Chromium	5.0E-05	NA	2.4E-08	5.0E-05		NA	NA	NA	0.0E+00
			Cobalt	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	5.8E-05	0.0E+00	1.3E-05	7.1E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					7.1E-05					0.0E+00
	Exposure Medium Total						7.1E-05					0.0E+00
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	1.7E-11	NA	1.7E-11		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	1.7E-11	0.0E+00	1.7E-11		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					1.7E-11					0.0E+00
	Exposure Medium Total						1.7E-11					0.0E+00
Soil* in Industrial Area Total							7.1E-05					0.0E+00

TABLE H 9.9.RME
Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	2.4E-07	NA	6.0E-07	8.4E-07		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.0E-06	NA	7.6E-06	1.1E-05		NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.7E-07	NA	9.3E-07	1.3E-06		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.6E-08	NA	6.7E-08	9.3E-08		NA	NA	NA	0.0E+00
			Chrysene	2.8E-09	NA	7.2E-09	1.0E-08		NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.5E-07	NA	3.8E-07	5.3E-07		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.2E-07	NA	5.5E-07	7.6E-07		NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Arsenic	2.6E-05	NA	2.5E-06	2.9E-05		NA	NA	NA	0.0E+00
			Chromium	1.1E-04	NA	5.6E-08	1.2E-04		NA	NA	NA	0.0E+00
			Cobalt	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Vanadium	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	1.5E-04	0.0E+00	1.3E-05	1.6E-04		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					1.6E-04					0.0E+00
	Exposure Medium Total						1.6E-04					0.0E+00
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	3.9E-11	NA	3.9E-11		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	3.9E-11	0.0E+00	3.9E-11		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.9E-11					0.0E+00
	Exposure Medium Total						3.9E-11					0.0E+00
Soil* in Flight Line Area Area Total							1.6E-04					0.0E+00

TABLE H 9.9.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	6.7E-08	NA	5.3E-09	7.3E-08		NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Benzene	1.9E-06	NA	2.8E-07	2.1E-06		NA	NA	NA	0.0E+00
			Chloroform	3.2E-07	NA	2.9E-08	3.5E-07		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Ethylbenzene	1.5E-07	NA	9.0E-08	2.4E-07		NA	NA	NA	0.0E+00
			Tetrachloroethene	1.5E-03	NA	9.1E-04	2.4E-03		NA	NA	NA	0.0E+00
			Trichloroethene	4.0E-06	NA	6.6E-07	4.6E-06		NA	NA	NA	0.0E+00
			Vinyl chloride	1.1E-04	NA	5.7E-06	1.1E-04		NA	NA	NA	0.0E+00
			Naphthalene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Antimony	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	1.6E-03	0.0E+00	9.1E-04	2.6E-03		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					2.6E-03					0.0E+00
	Exposure Medium Total						2.6E-03					0.0E+00

TABLE H 9.9.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Groundwater Group 1	Surficial Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	3.8E-08	NA	3.8E-08		NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Benzene	NA	6.1E-07	NA	6.1E-07		NA	NA	NA	0.0E+00
			Chloroform	NA	4.2E-07	NA	4.2E-07		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Ethylbenzene	NA	6.7E-08	NA	6.7E-08		NA	NA	NA	0.0E+00
			Tetrachloroethene	NA	2.7E-05	NA	2.7E-05		NA	NA	NA	0.0E+00
			Trichloroethene	NA	2.4E-06	NA	2.4E-06		NA	NA	NA	0.0E+00
			Vinyl chloride	NA	1.7E-06	NA	1.7E-06		NA	NA	NA	0.0E+00
			Naphthalene	NA	1.2E-07	NA	1.2E-07		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	3.2E-05	0.0E+00	3.2E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.2E-05					0.0E+00
	Exposure Medium Total						3.2E-05					0.0E+00
Groundwater Group 1 Total							2.6E-03					0.0E+00
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	1.9E-05	NA	1.1E-05	3.1E-05		NA	NA	NA	0.0E+00
			Chemical Total	1.9E-05	0.0E+00	1.1E-05	3.1E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.1E-05					0.0E+00
	Exposure Medium Total						3.1E-05					0.0E+00
	Groundwater Group 2	Middle Castle-Hayne Water Vapors at Showerhead	Tetrachloroethene	NA	3.4E-07	NA	3.4E-07		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	3.4E-07	0.0E+00	3.4E-07		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.4E-07					0.0E+00
	Exposure Medium Total						3.4E-07					0.0E+00
Groundwater Group 2 Total							3.1E-05					0.0E+00

TABLE H 9.9.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne	Chloroform	1.8E-07	NA	1.6E-08	1.9E-07		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.8E-05	NA	1.4E-03	1.5E-03		NA	NA	NA	0.0E+00
		Aquifer - Tap Water	Benzo(b)fluoranthene	1.3E-05	NA	2.8E-04	2.9E-04		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.1E-06	NA	2.1E-05	2.2E-05		NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.9E-04	NA	6.6E-05	2.5E-04		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.5E-05	NA	1.5E-06	1.7E-05		NA	NA	NA	0.0E+00
			Chromium	1.8E-03	NA	5.4E-07	1.8E-03		NA	NA	NA	0.0E+00
			Chemical Total	2.0E-03	0.0E+00	1.8E-03	3.9E-03		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.9E-03					0.0E+00
	Exposure Medium Total						3.9E-03					0.0E+00
	Groundwater Group 3	Middle Castle-Hayne	Chloroform	NA	9.9E-06	NA	9.9E-06		NA	NA	NA	0.0E+00
		Water Vapors at Showerhead	Chemical Total	0.0E+00	9.9E-06	0.0E+00	9.9E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					9.9E-06					0.0E+00
	Exposure Medium Total						9.9E-06					0.0E+00
Groundwater Group 3 Total							3.9E-03					0.0E+00

TABLE H 9.9.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 4	Upper Aquifer	Benzene	1.5E-06	NA	1.2E-06	2.7E-06		NA	NA	NA	0.0E+00
		Plume 1	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
		Tap Water	trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	1.4E-05	NA	1.8E-05	3.2E-05		NA	NA	NA	0.0E+00
			Vinyl chloride	2.4E-04	NA	5.9E-05	3.0E-04		NA	NA	NA	0.0E+00
			Chemical Total	2.6E-04	0.0E+00	7.9E-05	3.4E-04		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					3.4E-04					0.0E+00
	Exposure Medium Total						3.4E-04					0.0E+00
	Groundwater Group 4	Upper Aquifer	Benzene	NA	2.1E-05	NA	2.1E-05		NA	NA	NA	0.0E+00
		Plume 1 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	NA	3.5E-04	NA	3.5E-04		NA	NA	NA	0.0E+00
			Vinyl chloride	NA	1.6E-04	NA	1.6E-04		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	5.4E-04	0.0E+00	5.4E-04		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					5.4E-04					0.0E+00
	Exposure Medium Total						5.4E-04					0.0E+00
Groundwater Group 4 Total							8.7E-04					0.0E+00

TABLE H 9.9.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 5	Upper Aquifer	Benzene	3.7E-07	NA	5.6E-08	4.3E-07		NA	NA	NA	0.0E+00
		Plume 2	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
		Tap Water	Tetrachloroethene	2.3E-06	NA	1.3E-06	3.6E-06		NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	1.2E-05	NA	2.0E-06	1.4E-05		NA	NA	NA	0.0E+00
			Vinyl chloride	4.1E-06	NA	2.2E-07	4.3E-06		NA	NA	NA	0.0E+00
			Chemical Total	1.9E-05	0.0E+00	3.6E-06	2.3E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
			Exposure Point Total				2.3E-05					0.0E+00
			Exposure Medium Total				2.3E-05					0.0E+00
	Groundwater Group 5	Upper Aquifer	Benzene	NA	1.2E-07	NA	1.2E-07		NA	NA	NA	0.0E+00
		Plume 2 - Water Vapors at Showerhead	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Tetrachloroethene	NA	4.0E-08	NA	4.0E-08		NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	NA	1.4E-06	NA	1.4E-06		NA	NA	NA	0.0E+00
			Vinyl chloride	NA	0.0E+00	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	1.6E-06	0.0E+00	1.6E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00
			Exposure Point Total				1.6E-06					0.0E+00
			Exposure Medium Total				1.6E-06					0.0E+00
			Groundwater Group 5 Total				2.4E-05					0.0E+00
			Receptor Total				4.1E-03				Receptor HI Total	0.0E+00

TABLE H 9.10.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	3.9E-09	NA	3.3E-09	7.2E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.0E-08	NA	2.6E-08	5.5E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	4.1E-09	NA	3.5E-09	7.5E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.9E-10	NA	2.5E-10	5.4E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	4.3E-11	NA	3.7E-11	8.0E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.3E-09	NA	2.0E-09	4.3E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.0E-02	NA	6.7E-05	1.0E-02
			Arsenic	1.2E-07	NA	2.5E-08	1.5E-07	Skin, Vascular	4.8E-03	NA	9.5E-04	5.8E-03
			Chromium	4.2E-07	NA	6.9E-11	4.2E-07	Not identified	4.9E-03	NA	1.3E-03	6.1E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	5.0E-03	NA	3.3E-05	5.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	5.5E-03	NA	3.7E-05	5.6E-03
			Chemical Total	5.8E-07	0.0E+00	5.9E-08	6.4E-07		3.0E-02	0.0E+00	2.4E-03	3.3E-02
		Exposure Point Total					6.4E-07					3.3E-02
	Exposure Medium Total						6.4E-07					3.3E-02
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	1.2E-08	NA	1.2E-08	Respiratory System	NA	2.5E-05	NA	2.5E-05
			Chemical Total	0.0E+00	1.2E-08	0.0E+00	1.2E-08		0.0E+00	2.5E-05	0.0E+00	2.5E-05
		Exposure Point Total					1.2E-08					2.5E-05
	Exposure Medium Total						1.2E-08					2.5E-05
Soil* In Industrial Area Total							6.5E-07					3.3E-02

TABLE H 9.10.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	2.0E-09	NA	1.7E-09	3.7E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	2.5E-08	NA	2.1E-08	4.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.1E-09	NA	2.6E-09	5.7E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.2E-10	NA	1.9E-10	4.1E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.4E-11	NA	2.0E-11	4.4E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.3E-09	NA	1.1E-09	2.3E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.8E-09	NA	1.2E-11	1.8E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.0E-02	NA	4.0E-03	2.4E-02
			Arsenic	9.4E-07	NA	6.2E-09	9.4E-07	Skin, Vascular	3.6E-02	NA	2.4E-04	3.7E-02
			Chromium	9.6E-07	NA	1.6E-10	9.6E-07	Not identified	1.1E-02	NA	3.0E-03	1.4E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	4.9E-03	NA	3.2E-05	4.9E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	1.9E-02	NA	1.3E-04	1.9E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	1.2E-02	NA	2.9E-03	1.4E-02
			Chemical Total	1.9E-06	0.0E+00	3.3E-08	2.0E-06		1.0E-01	0.0E+00	1.0E-02	1.1E-01
		Exposure Point Total					2.0E-06					1.1E-01
	Exposure Medium Total						2.0E-06					1.1E-01
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	2.8E-08	NA	2.8E-08	Respiratory System	NA	5.8E-05	NA	5.8E-05
			Chemical Total	0.0E+00	2.8E-08	0.0E+00	2.8E-08		0.0E+00	5.8E-05	0.0E+00	5.8E-05
		Exposure Point Total					2.8E-08					5.8E-05
	Exposure Medium Total						2.8E-08					5.8E-05
Soil* in Flight Line Area Area Total							2.0E-06					1.1E-01
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.6E-06	NA	5.5E-06	1.5E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		9.6E-06	NA	5.5E-06	1.5E-05
		Exposure Point Total					0.0E+00					1.5E-05
	Exposure Medium Total						0.0E+00					1.5E-05
Surface Water in Pond Total							0.0E+00					1.5E-05

TABLE H 9.10.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	2.9E-11	NA	1.3E-10	1.6E-10	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.7E-10	NA	1.7E-09	2.0E-09	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	7.4E-11	NA	3.3E-10	4.1E-10	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.1E-12	NA	2.7E-11	3.3E-11	NA	NA	NA	NA	0.0E+00
			Chrysene	8.0E-13	NA	3.6E-12	4.4E-12	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.5E-10	NA	6.5E-10	8.0E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.7E-11	NA	2.5E-10	3.1E-10	NA	NA	NA	NA	0.0E+00
			Arsenic	1.1E-08	NA	1.1E-08	2.2E-08	Skin, Vascular	4.2E-04	NA	4.3E-04	8.6E-04
			Chromium	1.9E-08	NA	1.6E-11	1.9E-08	Not identified	2.2E-04	NA	3.0E-04	5.1E-04
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.8E-04	NA	1.6E-05	5.0E-04
			Chemical Total	3.0E-08	NA	1.4E-08	4.4E-08		1.1E-03	NA	7.5E-04	1.9E-03
		Exposure Point Total					4.4E-08					1.9E-03
	Exposure Medium Total						4.4E-08					1.9E-03
Sediment in Pond Total							4.4E-08					1.9E-03
Receptor Total							2.7E-06	Receptor HI Total				1.5E-01

Total Neurological HI Across All Media =	3.4E-02
Total Developmental HI Across All Media =	3.4E-02
Total Skin HI Across All Media =	4.3E-02
Total Vascular HI Across All Media =	4.3E-02
Total Thyroid HI Across All Media =	9.9E-03
Total Respiratory System HI Across All Media =	8.3E-05
Total Gastrointestinal HI Across All Media =	2.0E-02
Total Hair HI Across All Media =	1.4E-02
Total Blood HI Across All Media =	1.4E-02

TABLE H 9.11.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	2.4E-08	NA	2.1E-08	4.5E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.9E-07	NA	1.6E-07	3.5E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	2.5E-08	NA	2.2E-08	4.7E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.8E-09	NA	1.6E-09	3.4E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	2.7E-10	NA	2.3E-10	5.0E-10	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.4E-08	NA	1.2E-08	2.7E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	1.0E-02	NA	6.7E-05	1.0E-02
			Arsenic	7.7E-07	NA	1.5E-07	9.3E-07	Skin, Vascular	4.8E-03	NA	9.5E-04	5.8E-03
			Chromium	2.6E-06	NA	4.3E-10	2.6E-06	Not identified	4.9E-03	NA	1.3E-03	6.1E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	5.0E-03	NA	3.3E-05	5.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	5.5E-03	NA	3.7E-05	5.6E-03
			Chemical Total	3.6E-06	0.0E+00	3.7E-07	4.0E-06		3.0E-02	0.0E+00	2.4E-03	3.3E-02
		Exposure Point Total					4.0E-06					3.3E-02
	Exposure Medium Total						4.0E-06					3.3E-02
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	7.5E-08	NA	7.5E-08	Respiratory System	NA	2.5E-05	NA	2.5E-05
			Chemical Total	0.0E+00	7.5E-08	0.0E+00	7.5E-08		0.0E+00	2.5E-05	0.0E+00	2.5E-05
		Exposure Point Total					7.5E-08					2.5E-05
	Exposure Medium Total						7.5E-08					2.5E-05
Soil* in Industrial Area Total							4.1E-06					3.3E-02

TABLE H 9.11.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	1.2E-08	NA	1.1E-08	2.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.6E-07	NA	1.3E-07	2.9E-07	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.9E-08	NA	1.6E-08	3.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.4E-09	NA	1.2E-09	2.6E-09	NA	NA	NA	NA	0.0E+00
			Chrysene	1.5E-10	NA	1.3E-10	2.7E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	7.8E-09	NA	6.7E-09	1.5E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.1E-08	NA	7.4E-11	1.1E-08	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.0E-02	NA	4.0E-03	2.4E-02
			Arsenic	5.8E-06	NA	3.9E-08	5.9E-06	Skin, Vascular	3.6E-02	NA	2.4E-04	3.7E-02
			Chromium	6.0E-06	NA	9.9E-10	6.0E-06	Not identified	1.1E-02	NA	3.0E-03	1.4E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	4.9E-03	NA	3.2E-05	4.9E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	1.9E-02	NA	1.3E-04	1.9E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	1.2E-02	NA	2.9E-03	1.4E-02
			Chemical Total	1.2E-05	0.0E+00	2.1E-07	1.2E-05		1.0E-01	0.0E+00	1.0E-02	1.1E-01
		Exposure Point Total					1.2E-05					1.1E-01
	Exposure Medium Total						1.2E-05					1.1E-01
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	1.7E-07	NA	1.7E-07	Respiratory System	NA	5.8E-05	NA	5.8E-05
			Chemical Total	0.0E+00	1.7E-07	0.0E+00	1.7E-07		0.0E+00	5.8E-05	0.0E+00	5.8E-05
		Exposure Point Total					1.7E-07					5.8E-05
	Exposure Medium Total						1.7E-07					5.8E-05
Soil* in Flight Line Area Area Total							1.2E-05					1.1E-01

TABLE H 9.11.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	1.6E-08	NA	NA	1.6E-08	Kidney	3.9E-05	NA	NA	3.9E-05
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	2.7E-02	NA	NA	2.7E-02
			Benzene	4.4E-07	NA	NA	4.4E-07	Blood, Immune	5.5E-03	NA	NA	5.5E-03
			Chloroform	7.5E-08	NA	NA	7.5E-08	Liver	6.8E-04	NA	NA	6.8E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	3.5E-02	NA	NA	3.5E-02
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	3.2E-04	NA	NA	3.2E-04
			Ethylbenzene	3.5E-08	NA	NA	3.5E-08	Liver, Kidney	9.0E-05	NA	NA	9.0E-05
			Tetrachloroethene	3.6E-04	NA	NA	3.6E-04	Liver	1.9E-01	NA	NA	1.9E-01
			Trichloroethene	9.3E-07	NA	NA	9.3E-07	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	2.5E-05	NA	NA	2.5E-05	Liver	3.2E-02	NA	NA	3.2E-02
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	9.3E-05	NA	NA	9.3E-05
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	8.3E-02	NA	NA	8.3E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	7.4E-02	NA	NA	7.4E-02
			Chemical Total	3.9E-04	0.0E+00	0.0E+00	3.9E-04		4.4E-01	0.0E+00	0.0E+00	4.4E-01
		Exposure Point Total					3.9E-04					4.4E-01
	Exposure Medium Total						3.9E-04					4.4E-01
Groundwater Group 1 Total							3.9E-04					4.4E-01
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	4.5E-06	NA	NA	4.5E-06	Liver, Body Weight	2.3E-03	NA	NA	2.3E-03
			Chemical Total	4.5E-06	0.0E+00	0.0E+00	4.5E-06		2.3E-03	0.0E+00	0.0E+00	2.3E-03
		Exposure Point Total					4.5E-06					2.3E-03
	Exposure Medium Total						4.5E-06					2.3E-03
Groundwater Group 2 Total							4.5E-06					2.3E-03

TABLE H 9.11.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chloroform	4.1E-08	NA	NA	4.1E-08	Liver	3.7E-04	NA	NA	3.7E-04
			Benzo(a)pyrene	5.1E-06	NA	NA	5.1E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	9.7E-07	NA	NA	9.7E-07	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	7.9E-08	NA	NA	7.9E-08	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.4E-05	NA	NA	1.4E-05	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.1E-06	NA	NA	1.1E-06	NA	NA	NA	NA	0.0E+00
			Chromium	1.3E-04	NA	NA	1.3E-04	Not identified	2.5E-01	NA	NA	2.5E-01
			Chemical Total	1.5E-04	0.0E+00	0.0E+00	1.5E-04		2.5E-01	0.0E+00	0.0E+00	2.5E-01
		Exposure Point Total					1.5E-04					2.5E-01
	Exposure Medium Total						1.5E-04					2.5E-01
Groundwater Group 3 Total							1.5E-04					2.5E-01
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Benzene	3.5E-07	NA	NA	3.5E-07	Blood, Immune	4.4E-03	NA	NA	4.4E-03
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.6E-01	NA	NA	1.6E-01
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	2.5E-03	NA	NA	2.5E-03
			Trichloroethene	3.2E-06	NA	NA	3.2E-06	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	5.7E-05	NA	NA	5.7E-05	Liver	7.4E-02	NA	NA	7.4E-02
			Chemical Total	6.0E-05	0.0E+00	0.0E+00	6.0E-05		2.4E-01	0.0E+00	0.0E+00	2.4E-01
		Exposure Point Total					6.0E-05					2.4E-01
	Exposure Medium Total						6.0E-05					2.4E-01
Groundwater Group 4 Total							6.0E-05					2.4E-01

TABLE H 9.11.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 5	Upper Aquifer	Benzene	8.6E-08	NA	NA	8.6E-08	Blood, Immune	1.1E-03	NA	NA	1.1E-03
		Plume 2	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	3.0E-02	NA	NA	3.0E-02
		Tap Water	Tetrachloroethene	5.3E-07	NA	NA	5.3E-07	Liver, Body Weight	2.7E-04	NA	NA	2.7E-04
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.0E-03	NA	NA	1.0E-03
			Trichloroethene	2.9E-06	NA	NA	2.9E-06	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	9.5E-07	NA	NA	9.5E-07	Liver	1.2E-03	NA	NA	1.2E-03
			Chemical Total	4.5E-06	0.0E+00	0.0E+00	4.5E-06		3.3E-02	0.0E+00	0.0E+00	3.3E-02
		Exposure Point Total					4.5E-06					3.3E-02
	Exposure Medium Total						4.5E-06					3.3E-02
Groundwater Group 5 Total							4.5E-06					3.3E-02
Receptor Total							4.0E-04	Receptor HI Total				5.9E-01

Notes:

CNS - Central nervous system

Total Neurological HI Across All Media =	6.2E-02
Total Developmental HI Across All Media =	3.4E-02
Total Skin HI Across All Media =	4.2E-02
Total Vascular HI Across All Media =	4.2E-02
Total Thyroid HI Across All Media =	9.9E-03
Total Gastrointestinal HI Across All Media =	9.9E-02
Total Respiratory System HI Across All Media =	8.3E-05
Total Hair HI Across All Media =	1.4E-02
Total Blood HI Across All Media =	1.4E-01
Total Kidney HI Across All Media =	1.3E-04
Total Immune HI Across All Media =	5.5E-03
Total Liver HI Across All Media =	2.2E-01
Total Body Weight HI Across All Media =	9.3E-05
Total Whole Body HI Across All Media =	8.3E-02

TABLE H 9.12.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	4.9E-09	NA	2.5E-09	7.4E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.7E-08	NA	1.9E-08	5.6E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	5.1E-09	NA	2.6E-09	7.7E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	3.6E-10	NA	1.9E-10	5.5E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	5.4E-11	NA	2.8E-11	8.2E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.9E-09	NA	1.5E-09	4.4E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	2.1E-03	NA	8.4E-06	2.1E-03
			Arsenic	1.5E-07	NA	1.8E-08	1.7E-07	Skin, Vascular	1.0E-03	NA	1.2E-04	1.1E-03
			Chromium	5.2E-07	NA	5.2E-11	5.2E-07	Not identified	1.0E-03	NA	1.6E-04	1.2E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.0E-03	NA	4.1E-06	1.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	1.2E-03	NA	4.6E-06	1.2E-03
			Chemical Total	7.2E-07	0.0E+00	4.5E-08	7.7E-07		6.3E-03	0.0E+00	3.0E-04	6.6E-03
		Exposure Point Total					7.7E-07					6.6E-03
	Exposure Medium Total						7.7E-07					6.6E-03
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	3.7E-09	NA	3.7E-09	Respiratory System	NA	1.3E-06	NA	1.3E-06
			Chemical Total	0.0E+00	3.7E-09	0.0E+00	3.7E-09		0.0E+00	1.3E-06	0.0E+00	1.3E-06
		Exposure Point Total					3.7E-09					1.3E-06
	Exposure Medium Total						3.7E-09					1.3E-06
Soil* In Industrial Area Total							7.7E-07					6.6E-03

TABLE H 9.12.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	2.5E-09	NA	1.3E-09	3.7E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	3.1E-08	NA	1.6E-08	4.7E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.8E-09	NA	2.0E-09	5.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.7E-10	NA	1.4E-10	4.2E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.9E-11	NA	1.5E-11	4.5E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.6E-09	NA	8.1E-10	2.4E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	2.2E-09	NA	9.0E-12	2.3E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	4.2E-03	NA	5.0E-04	4.7E-03
			Arsenic	1.2E-06	NA	4.7E-09	1.2E-06	Skin, Vascular	7.6E-03	NA	3.0E-05	7.6E-03
			Chromium	1.2E-06	NA	1.2E-10	1.2E-06	Not identified	2.3E-03	NA	3.7E-04	2.7E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.0E-03	NA	4.1E-06	1.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.0E-03	NA	1.6E-05	4.0E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.4E-03	NA	3.7E-04	2.8E-03
			Chemical Total	2.4E-06	0.0E+00	2.5E-08	2.4E-06		2.2E-02	0.0E+00	1.3E-03	2.3E-02
		Exposure Point Total					2.4E-06					2.3E-02
	Exposure Medium Total						2.4E-06					2.3E-02
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	8.6E-09	NA	8.6E-09	Respiratory System	NA	3.0E-06	NA	3.0E-06
			Chemical Total	0.0E+00	8.6E-09	0.0E+00	8.6E-09		0.0E+00	3.0E-06	0.0E+00	3.0E-06
		Exposure Point Total					8.6E-09					3.0E-06
	Exposure Medium Total						8.6E-09					3.0E-06
Soil* in Flight Line Area Area Total							2.4E-06					2.3E-02
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.2E-05	NA	5.5E-06	4.7E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		4.2E-05	NA	5.5E-06	4.7E-05
		Exposure Point Total					0.0E+00					4.7E-05
	Exposure Medium Total						0.0E+00					4.7E-05
Surface Water in Pond Total							0.0E+00					4.7E-05

TABLE H 9.12.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	7.6E-10	NA	3.4E-09	4.2E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	9.7E-09	NA	4.3E-08	5.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.9E-09	NA	8.6E-09	1.1E-08	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.6E-10	NA	7.0E-10	8.6E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.1E-11	NA	9.3E-11	1.1E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	3.8E-09	NA	1.7E-08	2.1E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.5E-09	NA	6.6E-09	8.0E-09	NA	NA	NA	NA	0.0E+00
			Arsenic	2.8E-07	NA	2.9E-07	5.7E-07	Skin, Vascular	1.8E-03	NA	1.9E-03	3.7E-03
			Chromium	4.8E-07	NA	4.1E-10	4.8E-07	Not identified	9.4E-04	NA	1.3E-03	2.2E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.1E-03	NA	7.1E-05	2.1E-03
			Chemical Total	7.8E-07	NA	3.7E-07	1.2E-06		4.8E-03	NA	3.2E-03	8.1E-03
		Exposure Point Total					1.2E-06					8.1E-03
	Exposure Medium Total						1.2E-06					8.1E-03
Sediment in Pond Total							1.2E-06					8.1E-03
Receptor Total							4.4E-06	Receptor HI Total				3.8E-02

Total Neurological HI Across All Media =	6.8E-03
Total Developmental HI Across All Media =	6.8E-03
Total Skin HI Across All Media =	1.2E-02
Total Vascular HI Across All Media =	1.2E-02
Total Thyroid HI Across All Media =	2.1E-03
Total Respiratory System HI Across All Media =	4.3E-06
Total Gastrointestinal HI Across All Media =	6.2E-03
Total Hair HI Across All Media =	2.8E-03
Total Blood HI Across All Media =	2.8E-03

TABLE H 9.13.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	3.1E-09	NA	6.9E-10	3.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	2.4E-08	NA	5.3E-09	2.9E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.3E-09	NA	7.2E-10	4.0E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.4E-10	NA	5.2E-11	2.9E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	3.5E-11	NA	7.6E-12	4.3E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.9E-09	NA	4.1E-10	2.3E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.3E-03	NA	5.5E-06	3.3E-03
			Arsenic	1.0E-07	NA	5.0E-09	1.1E-07	Skin, Vascular	1.6E-03	NA	7.9E-05	1.6E-03
			Chromium	3.4E-07	NA	1.4E-11	3.4E-07	Not identified	1.6E-03	NA	1.1E-04	1.7E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.6E-03	NA	2.7E-06	1.6E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	1.8E-03	NA	3.0E-06	1.8E-03
			Chemical Total	4.7E-07	0.0E+00	1.2E-08	4.8E-07		9.8E-03	0.0E+00	2.0E-04	1.0E-02
		Exposure Point Total					4.8E-07					1.0E-02
	Exposure Medium Total						4.8E-07					1.0E-02
	Air	Emissions from Soil* in Industrial Area	Chromium	NA	1.6E-09	NA	1.6E-09	Respiratory System	NA	1.3E-06	NA	1.3E-06
			Chemical Total	0.0E+00	1.6E-09	0.0E+00	1.6E-09		0.0E+00	1.3E-06	0.0E+00	1.3E-06
		Exposure Point Total					1.6E-09					1.3E-06
	Exposure Medium Total						1.6E-09					1.3E-06
Soil* In Industrial Area Total							4.8E-07					1.0E-02

TABLE H 9.13.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	1.6E-09	NA	2.2E-10	1.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	2.0E-08	NA	2.8E-09	2.3E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	2.5E-09	NA	3.5E-10	2.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.8E-10	NA	2.5E-11	2.0E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	1.9E-11	NA	2.7E-12	2.2E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.0E-09	NA	1.4E-10	1.2E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.5E-09	NA	1.6E-12	1.5E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	6.6E-03	NA	2.1E-04	6.8E-03
			Arsenic	7.6E-07	NA	8.2E-10	7.6E-07	Skin, Vascular	1.2E-02	NA	1.3E-05	1.2E-02
			Chromium	7.8E-07	NA	2.1E-11	7.8E-07	Not identified	3.6E-03	NA	1.6E-04	3.8E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.6E-03	NA	1.7E-06	1.6E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	6.3E-03	NA	6.8E-06	6.3E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	3.7E-03	NA	1.6E-04	3.9E-03
			Chemical Total	1.6E-06	0.0E+00	4.4E-09	1.6E-06		3.4E-02	0.0E+00	5.5E-04	3.4E-02
		Exposure Point Total					1.6E-06					3.4E-02
	Exposure Medium Total						1.6E-06					3.4E-02
	Air	Emissions from Soil* in Flight Line Area	Chromium	NA	3.6E-09	NA	3.6E-09	Respiratory System	NA	3.0E-06	NA	3.0E-06
			Chemical Total	0.0E+00	3.6E-09	0.0E+00	3.6E-09		0.0E+00	3.0E-06	0.0E+00	3.0E-06
		Exposure Point Total					3.6E-09					3.0E-06
	Exposure Medium Total						3.6E-09					3.0E-06
Soil* in Flight Line Area Area Total							1.6E-06					3.4E-02
Surface Water	Surface Water	Pond	Iron	NA	NA	NA	0.0E+00	Gastrointestinal	6.5E-05	NA	5.5E-06	7.0E-05
			Chemical Total	0.0E+00	NA	0.0E+00	0.0E+00		6.5E-05	NA	5.5E-06	7.0E-05
		Exposure Point Total					0.0E+00					7.0E-05
	Exposure Medium Total						0.0E+00					7.0E-05
Surface Water in Pond Total							0.0E+00					7.0E-05

TABLE H 9.13.RME

Summary of Receptor Risks and Hazards for COPCs – Reasonable Maximum Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Trespasser/Visitor
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Pond	Benzo(a)anthracene	5.0E-10	NA	3.4E-09	3.9E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.3E-09	NA	4.3E-08	4.9E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.3E-09	NA	8.6E-09	9.9E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.0E-10	NA	7.0E-10	8.0E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	1.4E-11	NA	9.3E-11	1.1E-10	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	2.5E-09	NA	1.7E-08	1.9E-08	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	9.6E-10	NA	6.6E-09	7.5E-09	NA	NA	NA	NA	0.0E+00
			Arsenic	1.8E-07	NA	2.9E-07	4.7E-07	Skin, Vascular	2.8E-03	NA	7.4E-04	3.6E-03
			Chromium	3.1E-07	NA	4.1E-10	3.1E-07	Not identified	1.5E-03	NA	5.0E-04	2.0E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.2E-03	NA	2.8E-05	3.3E-03
			Chemical Total	5.1E-07	NA	3.7E-07	8.8E-07		7.5E-03	NA	1.3E-03	8.8E-03
		Exposure Point Total					8.8E-07					8.8E-03
	Exposure Medium Total						8.8E-07					8.8E-03
Sediment in Pond Total							8.8E-07					8.8E-03
Receptor Total							2.9E-06	Receptor HI Total				5.3E-02

Total Neurological HI Across All Media =	1.0E-02
Total Developmental HI Across All Media =	1.0E-02
Total Skin HI Across All Media =	1.7E-02
Total Vascular HI Across All Media =	1.7E-02
Total Thyroid HI Across All Media =	3.2E-03
Total Respiratory System HI Across All Media =	4.3E-06
Total Gastrointestinal HI Across All Media =	9.6E-03
Total Hair HI Across All Media =	3.9E-03
Total Blood HI Across All Media =	3.9E-03

TABLE H 9.1.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.5E-03	NA	4.0E-06	3.5E-03
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	1.9E-03	NA	6.4E-05	1.9E-03
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.8E-03	NA	8.1E-05	1.9E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.9E-03	NA	2.2E-06	1.9E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.1E-03	NA	2.4E-06	2.1E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.1E-02	0.0E+00	1.5E-04	1.1E-02
		Exposure Point Total					0.0E+00					1.1E-02
	Exposure Medium Total						0.0E+00					1.1E-02
Soil* in Industrial Area Total							0.0E+00					1.1E-02

TABLE H 9.1.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	9.5E-03	NA	7.9E-06	9.5E-03
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	1.7E-02	NA	1.5E-04	1.7E-02
			Chromium	NA	NA	NA	0.0E+00	Not identified	5.2E-03	NA	1.2E-04	5.4E-03
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	2.3E-03	NA	2.2E-06	2.3E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.1E-03	NA	4.8E-06	9.1E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	5.4E-03	NA	1.1E-04	5.5E-03
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		4.9E-02	0.0E+00	4.0E-04	4.9E-02
		Exposure Point Total					0.0E+00					4.9E-02
	Exposure Medium Total						0.0E+00					4.9E-02
Soil* in Flight Line Area Area Total							0.0E+00					4.9E-02

TABLE H 9.1.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	NA	NA	NA	0.0E+00	Kidney	5.1E-05	NA	3.8E-06	5.4E-05
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	3.6E-02	NA	1.4E-03	3.7E-02
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	7.3E-03	NA	1.0E-03	8.3E-03
			Chloroform	NA	NA	NA	0.0E+00	Liver	8.9E-04	NA	7.6E-05	9.6E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	4.6E-02	NA	3.8E-03	5.0E-02
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	4.1E-04	NA	4.7E-05	4.6E-04
			Ethylbenzene	NA	NA	NA	0.0E+00	Liver, Kidney	1.2E-04	NA	6.7E-05	1.8E-04
			Tetrachloroethene	NA	NA	NA	0.0E+00	Liver	2.4E-01	NA	1.4E-01	3.8E-01
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	4.3E-02	NA	2.1E-03	4.5E-02
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	1.2E-04	NA	7.5E-05	2.0E-04
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	1.1E-01	NA	2.3E-03	1.1E-01
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	9.7E-02	NA	3.1E-04	9.7E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		5.8E-01	0.0E+00	1.5E-01	7.3E-01
		Exposure Point Total					0.0E+00					7.3E-01
	Exposure Medium Total						0.0E+00					7.3E-01
Groundwater Group 1 Total							0.0E+00					7.3E-01

TABLE H 9.1.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 4	Upper Aquifer	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	4.1E-03	NA	4.3E-03	8.5E-03
		Plume 1	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.5E-01	NA	1.7E-02	1.6E-01
		Tap Water	trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	2.4E-03	NA	1.6E-03	4.0E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	6.9E-02	NA	2.2E-02	9.1E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.2E-01	0.0E+00	4.5E-02	2.7E-01
		Exposure Point Total					0.0E+00					2.7E-01
	Exposure Medium Total						0.0E+00					2.7E-01
Groundwater Group 4 Total							0.0E+00					2.7E-01
Receptor Total							0.0E+00	Receptor HI Total				7.9E-01

Notes:

CNS - Central nervous system

Total Neurological HI Across All Media =	5.0E-02
Total Developmental HI Across All Media =	1.3E-02
Total Skin HI Across All Media =	1.9E-02
Total Vascular HI Across All Media =	1.9E-02
Total Thyroid HI Across All Media =	4.2E-03
Total Gastrointestinal HI Across All Media =	1.1E-01
Total Hair HI Across All Media =	5.5E-03
Total Blood HI Across All Media =	1.8E-01
Total Kidney HI Across All Media =	2.4E-04
Total Immune HI Across All Media =	8.3E-03
Total Liver HI Across All Media =	4.3E-01
Total Body Weight HI Across All Media =	2.0E-04
Total Whole Body HI Across All Media =	1.1E-01

TABLE H 9.2.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.3E-02	NA	3.7E-05	3.3E-02
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	1.7E-02	NA	5.8E-04	1.8E-02
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.7E-02	NA	7.4E-04	1.7E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.8E-02	NA	2.0E-05	1.8E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.0E-02	NA	2.2E-05	2.0E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.0E-01	0.0E+00	1.4E-03	1.1E-01
		Exposure Point Total					0.0E+00					1.1E-01
	Exposure Medium Total						0.0E+00					1.1E-01
Soil* in Industrial Area Total							0.0E+00					1.1E-01
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chrysene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	6.5E-02	NA	7.3E-05	6.5E-02
			Arsenic	NA	NA	NA	0.0E+00	Skin, Vascular	4.1E-02	NA	1.4E-03	4.2E-02
			Chromium	NA	NA	NA	0.0E+00	Not identified	2.5E-02	NA	1.1E-03	2.6E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.8E-02	NA	2.0E-05	1.8E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.0E-02	NA	4.4E-05	4.0E-02
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.4E-02	NA	1.0E-03	2.5E-02
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.1E-01	0.0E+00	3.7E-03	2.2E-01
		Exposure Point Total					0.0E+00					2.2E-01
	Exposure Medium Total						0.0E+00					2.2E-01

TABLE H 9.2.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Soil* in Flight Line Area Area Total				0.0E+00					2.2E-01
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	NA	NA	NA	0.0E+00	Kidney	1.7E-04	NA	7.4E-06	1.8E-04
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	1.2E-01	NA	2.8E-03	1.2E-01
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	2.4E-02	NA	2.0E-03	2.6E-02
			Chloroform	NA	NA	NA	0.0E+00	Liver	3.0E-03	NA	1.5E-04	3.1E-03
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.5E-01	NA	7.5E-03	1.6E-01
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	1.4E-03	NA	9.2E-05	1.5E-03
			Ethylbenzene	NA	NA	NA	0.0E+00	Liver, Kidney	3.9E-04	NA	1.3E-04	5.2E-04
			Tetrachloroethene	NA	NA	NA	0.0E+00	Liver	8.1E-01	NA	2.7E-01	1.1E+00
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	1.4E-01	NA	4.1E-03	1.5E-01
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	4.1E-04	NA	1.5E-04	5.5E-04
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	3.6E-01	NA	5.3E-03	3.7E-01
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	3.2E-01	NA	7.0E-04	3.2E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.9E+00	0.0E+00	2.9E-01	2.2E+00
			Exposure Point Total				0.0E+00					2.2E+00
			Exposure Medium Total				0.0E+00					2.2E+00
	Groundwater Group 1	Surficial Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	NA	7.3E-04	NA	7.3E-04
			Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	4.6E-04	NA	4.6E-04
			Chloroform	NA	NA	NA	0.0E+00	Liver	NA	3.3E-05	NA	3.3E-05
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	Liver	NA	1.6E-04	NA	1.6E-04
			Ethylbenzene	NA	NA	NA	0.0E+00	Fetus	NA	4.7E-06	NA	4.7E-06
			Tetrachloroethene	NA	NA	NA	0.0E+00	Kidney, Liver	NA	3.0E-03	NA	3.0E-03
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	6.7E-04	NA	6.7E-04
			Naphthalene	NA	NA	NA	0.0E+00	NA	NA	2.0E-04	NA	2.0E-04
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	5.3E-03	0.0E+00	5.3E-03
			Exposure Point Total				0.0E+00					5.3E-03
			Exposure Medium Total				0.0E+00					5.3E-03
			Groundwater Group 1 Total				0.0E+00					2.2E+00

TABLE H 9.2.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chloroform	NA	NA	NA	0.0E+00	Liver	1.6E-03	NA	8.2E-05	1.7E-03
			Benzo(a)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Chromium	NA	NA	NA	0.0E+00	Not identified	1.1E+00	NA	1.9E-01	1.3E+00
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.1E+00	0.0E+00	1.9E-01	1.3E+00
		Exposure Point Total					0.0E+00					1.3E+00
	Exposure Medium Total						0.0E+00					1.3E+00
	Groundwater Group 3	Middle Castle-Hayne Water Vapors at at Showerhead	Chloroform	NA	NA	NA	0.0E+00	Liver	NA	1.8E-05	NA	1.8E-05
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	1.8E-05	0.0E+00	1.8E-05
		Exposure Point Total					0.0E+00					1.8E-05
	Exposure Medium Total						0.0E+00					1.8E-05
Groundwater Group 3 Total							0.0E+00					1.3E+00

TABLE H 9.2.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	1.9E-02	NA	8.5E-03	2.8E-02
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	6.9E-01	NA	3.3E-02	7.2E-01
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.1E-02	NA	3.2E-03	1.4E-02
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	3.2E-01	NA	4.3E-02	3.6E-01
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.0E+00	0.0E+00	8.9E-02	1.1E+00
		Exposure Point Total					0.0E+00					1.1E+00
	Exposure Medium Total						0.0E+00					1.1E+00
	Groundwater Group 4	Upper Aquifer Plume 1 - Water Vapors at Showerhead	Benzene	NA	NA	NA	0.0E+00	Blood, Immune	NA	4.0E-06	NA	4.0E-06
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Respiratory System	NA	5.0E-06	NA	5.0E-06
			Trichloroethene	NA	NA	NA	0.0E+00	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	NA	NA	NA	0.0E+00	Liver	NA	1.7E-05	NA	1.7E-05
			Chemical Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00		0.0E+00	2.6E-05	0.0E+00	2.6E-05
		Exposure Point Total					0.0E+00					2.6E-05
	Exposure Medium Total						0.0E+00					2.6E-05
Groundwater Group 4 Total							0.0E+00					1.1E+00
Receptor Total							0.0E+00	Receptor HI Total				2.6E+00

Notes:

CNS - Central nervous system

Total Neurological HI Across All Media =	2.2E-01
Total Developmental HI Across All Media =	9.8E-02
Total Skin HI Across All Media =	6.0E-02
Total Vascular HI Across All Media =	6.0E-02
Total Thyroid HI Across All Media =	3.6E-02
Total Gastrointestinal HI Across All Media =	3.8E-01
Total Respiratory System HI Across All Media =	5.0E-06
Total Hair HI Across All Media =	2.5E-02
Total Blood HI Across All Media =	5.8E-01
Total Kidney HI Across All Media =	3.7E-03
Total Immune HI Across All Media =	2.7E-02
Total Liver HI Across All Media =	1.2E+00
Total Body Weight HI Across All Media =	5.5E-04
Total Whole Body HI Across All Media =	3.7E-01
Total Fetus HI Across all Media =	4.7E-06

TABLE H 9.3.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	8.6E-08	NA	4.4E-07	5.2E-07		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	6.8E-07	NA	3.4E-06	4.1E-06		NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	9.8E-08	NA	5.0E-07	5.9E-07		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	6.3E-09	NA	3.2E-08	3.9E-08		NA	NA	NA	0.0E+00
			Chrysene	9.7E-10	NA	4.9E-09	5.9E-09		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	5.2E-08	NA	2.7E-07	3.2E-07		NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Arsenic	1.9E-06	NA	1.8E-07	2.1E-06		NA	NA	NA	0.0E+00
			Chromium	1.3E-05	NA	4.8E-10	1.3E-05		NA	NA	NA	0.0E+00
			Cobalt	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	1.6E-05	0.0E+00	4.9E-06	2.1E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					2.1E-05					0.0E+00
	Exposure Medium Total						2.1E-05					0.0E+00
Soil* in Industrial Area Total							2.1E-05					0.0E+00
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	3.7E-08	NA	1.9E-07	2.3E-07		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	4.7E-07	NA	2.4E-06	2.9E-06		NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	6.5E-08	NA	3.3E-07	3.9E-07		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	3.8E-09	NA	1.9E-08	2.3E-08		NA	NA	NA	0.0E+00
			Chrysene	4.7E-10	NA	2.4E-09	2.9E-09		NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	3.9E-08	NA	2.0E-07	2.4E-07		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	3.7E-08	NA	1.9E-07	2.2E-07		NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Arsenic	4.5E-06	NA	4.3E-07	5.0E-06		NA	NA	NA	0.0E+00
			Chromium	9.3E-06	NA	4.5E-05	5.5E-05		NA	NA	NA	0.0E+00
			Cobalt	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Vanadium	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	1.4E-05	0.0E+00	4.9E-05	6.4E-05		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					6.4E-05					0.0E+00
	Exposure Medium Total						6.4E-05					0.0E+00
Soil* in Flight Line Area Area Total							6.4E-05					0.0E+00

TABLE H 9.3.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	2.4E-08	NA	1.3E-09	2.5E-08		NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Benzene	6.6E-07	NA	6.8E-08	7.3E-07		NA	NA	NA	0.0E+00
			Chloroform	1.1E-07	NA	7.0E-09	1.2E-07		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Ethylbenzene	5.4E-08	NA	2.2E-08	7.6E-08		NA	NA	NA	0.0E+00
			Tetrachloroethene	5.5E-04	NA	2.2E-04	7.7E-04		NA	NA	NA	0.0E+00
			Trichloroethene	1.4E-06	NA	1.6E-07	1.6E-06		NA	NA	NA	0.0E+00
			Vinyl chloride	3.8E-05	NA	1.3E-06	3.9E-05		NA	NA	NA	0.0E+00
			Naphthalene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Antimony	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Iron	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Chemical Total	5.9E-04	0.0E+00	2.2E-04	8.1E-04		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					8.1E-04					0.0E+00
	Exposure Medium Total						8.1E-04					0.0E+00
	Groundwater Group 1	Surficial Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	2.6E-09	NA	2.6E-09		NA	NA	NA	0.0E+00
			2-Hexanone	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Benzene	NA	4.2E-08	NA	4.2E-08		NA	NA	NA	0.0E+00
			Chloroform	NA	2.9E-08	NA	2.9E-08		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Ethylbenzene	NA	4.6E-09	NA	4.6E-09		NA	NA	NA	0.0E+00
			Tetrachloroethene	NA	1.9E-06	NA	1.9E-06		NA	NA	NA	0.0E+00
			Trichloroethene	NA	1.7E-07	NA	1.7E-07		NA	NA	NA	0.0E+00
			Vinyl chloride	NA	1.1E-07	NA	1.1E-07		NA	NA	NA	0.0E+00
			Naphthalene	NA	8.0E-09	NA	8.0E-09		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	2.2E-06	0.0E+00	2.2E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					2.2E-06					0.0E+00
	Exposure Medium Total						2.2E-06					0.0E+00
Groundwater Group 1 Total							8.1E-04					0.0E+00

TABLE H 9.3.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	6.9E-06	NA	1.2E-06	8.1E-06		NA	NA	NA	0.0E+00
			Chemical Total	6.9E-06	0.0E+00	1.2E-06	8.1E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00
			Exposure Point Total				8.1E-06					0.0E+00
			Exposure Medium Total				8.1E-06					0.0E+00
			Groundwater Group 2 Total				8.1E-06					0.0E+00
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chloroform	6.3E-08	NA	3.8E-09	6.6E-08		NA	NA	NA	0.0E+00
			Benzo(a)pyrene	4.5E-05	NA	5.8E-04	6.3E-04		NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	8.6E-06	NA	1.1E-04	1.2E-04		NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	7.0E-07	NA	8.6E-06	9.3E-06		NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	1.2E-04	NA	2.7E-05	1.5E-04		NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.0E-05	NA	6.1E-07	1.1E-05		NA	NA	NA	0.0E+00
			Chromium	1.2E-03	NA	1.3E-07	1.2E-03		NA	NA	NA	0.0E+00
			Chemical Total	1.4E-03	0.0E+00	7.3E-04	2.1E-03		0.0E+00	0.0E+00	0.0E+00	0.0E+00
			Exposure Point Total				2.1E-03					0.0E+00
			Exposure Medium Total				2.1E-03					0.0E+00
	Groundwater Group 3	Middle Castle-Hayne Water Vapors at Showerhead	Chloroform	NA	1.6E-08	NA	1.6E-08		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	1.6E-08	0.0E+00	1.6E-08		0.0E+00	0.0E+00	0.0E+00	0.0E+00
			Exposure Point Total				1.6E-08					0.0E+00
			Exposure Medium Total				1.6E-08					0.0E+00
			Groundwater Group 3 Total				2.1E-03					0.0E+00

TABLE H 9.3.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Benzene	5.3E-07	NA	2.8E-07	8.1E-07		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	4.9E-06	NA	3.8E-06	8.7E-06		NA	NA	NA	0.0E+00
			Vinyl chloride	8.6E-05	NA	1.4E-05	1.0E-04		NA	NA	NA	0.0E+00
			Chemical Total	9.2E-05	0.0E+00	1.8E-05	1.1E-04		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					1.1E-04					0.0E+00
	Exposure Medium Total						1.1E-04					0.0E+00
	Groundwater Group 4	Upper Aquifer Plume 1 - Water Vapors at Showerhead	Benzene	NA	5.0E-11	NA	5.0E-11		NA	NA	NA	0.0E+00
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00		NA	NA	NA	0.0E+00
			Trichloroethene	NA	8.6E-10	NA	8.6E-10		NA	NA	NA	0.0E+00
			Vinyl chloride	NA	3.9E-10	NA	3.9E-10		NA	NA	NA	0.0E+00
			Chemical Total	0.0E+00	1.3E-09	0.0E+00	1.3E-09		0.0E+00	0.0E+00	0.0E+00	0.0E+00
		Exposure Point Total					1.3E-09					0.0E+00
	Exposure Medium Total						1.3E-09					0.0E+00
Groundwater Group 4 Total							1.1E-04					0.0E+00
Receptor Total							8.9E-04	Receptor HI Total				0.0E+00

TABLE H 9.4.CTE
Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	2.1E-09	NA	3.6E-10	2.5E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.7E-08	NA	2.9E-09	2.0E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	2.4E-09	NA	4.1E-10	2.8E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	1.6E-10	NA	2.7E-11	1.8E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	2.4E-11	NA	4.1E-12	2.8E-11	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	1.3E-09	NA	2.2E-10	1.5E-09	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	3.3E-03	NA	4.3E-03	7.6E-03
			Arsenic	1.0E-07	NA	4.0E-09	1.0E-07	Skin, Vascular	1.7E-03	NA	2.3E-03	4.0E-03
			Chromium	3.2E-07	NA	1.1E-11	3.2E-07	Not identified	1.7E-03	NA	8.8E-02	8.9E-02
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.8E-03	NA	2.3E-03	4.1E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	2.0E-03	NA	2.6E-03	4.6E-03
			Chemical Total	4.4E-07	0.0E+00	7.9E-09	4.5E-07		1.0E-02	0.0E+00	9.9E-02	1.1E-01
		Exposure Point Total					4.5E-07					1.1E-01
	Exposure Medium Total						4.5E-07					1.1E-01
Soil* in Industrial Area Total							4.5E-07					1.1E-01
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)anthracene	9.2E-10	NA	1.6E-10	1.1E-09	NA	NA	NA	NA	0.0E+00
			Benzo(a)pyrene	1.2E-08	NA	2.0E-09	1.4E-08	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	1.6E-09	NA	2.7E-10	1.9E-09	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	9.3E-11	NA	1.6E-11	1.1E-10	NA	NA	NA	NA	0.0E+00
			Chrysene	1.2E-11	NA	2.0E-12	1.4E-11	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	9.7E-10	NA	1.7E-10	1.1E-09	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	9.0E-10	NA	1.2E-12	9.0E-10	NA	NA	NA	NA	0.0E+00
			Aluminum	NA	NA	NA	0.0E+00	Neurological, Developmental	6.5E-03	NA	8.6E-03	1.5E-02
			Arsenic	2.4E-07	NA	3.1E-10	2.4E-07	Skin, Vascular	4.1E-03	NA	5.4E-03	9.6E-03
			Chromium	4.9E-07	NA	1.6E-11	4.9E-07	Not identified	2.5E-03	NA	1.3E-01	1.4E-01
			Cobalt	NA	NA	NA	0.0E+00	Thyroid	1.8E-03	NA	2.4E-03	4.1E-03
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	4.0E-03	NA	5.2E-03	9.2E-03
			Vanadium	NA	NA	NA	0.0E+00	Hair, Blood	2.4E-03	NA	1.2E-01	1.2E-01
			Chemical Total	7.4E-07	0.0E+00	2.9E-09	7.5E-07		2.1E-02	0.0E+00	2.8E-01	3.0E-01
		Exposure Point Total					7.5E-07					3.0E-01
	Exposure Medium Total						7.5E-07					3.0E-01
Soil* in Flight Line Area Area Total							7.5E-07					3.0E-01

TABLE H 9.4.CTE
Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	1,1-Dichloroethane	5.0E-09	NA	NA	5.0E-09	Kidney	3.4E-05	NA	NA	3.4E-05
			2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	2.4E-02	NA	NA	2.4E-02
			Benzene	1.4E-07	NA	NA	1.4E-07	Blood, Immune	4.9E-03	NA	NA	4.9E-03
			Chloroform	2.4E-08	NA	NA	2.4E-08	Liver	5.9E-04	NA	NA	5.9E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	3.1E-02	NA	NA	3.1E-02
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	2.8E-04	NA	NA	2.8E-04
			Ethylbenzene	1.1E-08	NA	NA	1.1E-08	Liver, Kidney	7.9E-05	NA	NA	7.9E-05
			Tetrachloroethene	1.1E-04	NA	NA	1.1E-04	Liver	1.6E-01	NA	NA	1.6E-01
			Trichloroethene	2.9E-07	NA	NA	2.9E-07	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	7.9E-06	NA	NA	7.9E-06	Liver	2.8E-02	NA	NA	2.8E-02
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	8.1E-05	NA	NA	8.1E-05
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	7.3E-02	NA	NA	7.3E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	6.5E-02	NA	NA	6.5E-02
			Chemical Total	1.2E-04	0.0E+00	0.0E+00	1.2E-04		3.9E-01	0.0E+00	0.0E+00	3.9E-01
		Exposure Point Total					1.2E-04					3.9E-01
	Exposure Medium Total						1.2E-04					3.9E-01
Groundwater Group 1 Total							1.2E-04					3.9E-01
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chloroform	1.3E-08	NA	NA	1.3E-08	Liver	3.3E-04	NA	NA	3.3E-04
			Benzo(a)pyrene	1.6E-06	NA	NA	1.6E-06	NA	NA	NA	NA	0.0E+00
			Benzo(b)fluoranthene	3.1E-07	NA	NA	3.1E-07	NA	NA	NA	NA	0.0E+00
			Benzo(k)fluoranthene	2.5E-08	NA	NA	2.5E-08	NA	NA	NA	NA	0.0E+00
			Dibenz(a,h)anthracene	4.4E-06	NA	NA	4.4E-06	NA	NA	NA	NA	0.0E+00
			Indeno(1,2,3-cd)pyrene	3.6E-07	NA	NA	3.6E-07	NA	NA	NA	NA	0.0E+00
			Chromium	4.2E-05	NA	NA	4.2E-05	Not identified	2.2E-01	NA	NA	2.2E-01
			Chemical Total	4.9E-05	0.0E+00	0.0E+00	4.9E-05		2.2E-01	0.0E+00	0.0E+00	2.2E-01
		Exposure Point Total					4.9E-05					2.2E-01
	Exposure Medium Total						4.9E-05					2.2E-01
Groundwater Group 3 Total							4.9E-05					2.2E-01

TABLE H 9.4.CTE

Summary of Receptor Risks and Hazards for COPCs – Central Tendency Exposure

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 4	Upper Aquifer	Benzene	1.1E-07	NA	NA	1.1E-07	Blood, Immune	3.9E-03	NA	NA	3.9E-03
		Plume 1	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	1.4E-01	NA	NA	1.4E-01
		Tap Water	trans-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	2.2E-03	NA	NA	2.2E-03
			Trichloroethene	1.0E-06	NA	NA	1.0E-06	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	1.8E-05	NA	NA	1.8E-05	Liver	6.4E-02	NA	NA	6.4E-02
			Chemical Total	1.9E-05	0.0E+00	0.0E+00	1.9E-05		2.1E-01	0.0E+00	0.0E+00	2.1E-01
		Exposure Point Total					1.9E-05					2.1E-01
	Exposure Medium Total						1.9E-05					2.1E-01
Groundwater Group 4 Total							1.9E-05					2.1E-01
Receptor Total							1.2E-04	Receptor HI Total				8.0E-01

Notes:

CNS - Central nervous system

Total Neurological HI Across All Media =	4.7E-02
Total Developmental HI Across All Media =	2.3E-02
Total Skin HI Across All Media =	1.4E-02
Total Vascular HI Across All Media =	1.4E-02
Total Thyroid HI Across All Media =	8.3E-03
Total Gastrointestinal HI Across All Media =	7.9E-02
Total Hair HI Across All Media =	1.2E-01
Total Blood HI Across All Media =	2.3E-01
Total Kidney HI Across All Media =	1.1E-04
Total Immune HI Across All Media =	4.9E-03
Total Liver HI Across All Media =	1.9E-01
Total Body Weight HI Across All Media =	8.1E-05
Total Whole Body HI Across All Media =	7.3E-02

TABLE H 10.1.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer	cis-1,2-Dichloroethene					Blood	9.9E-02	NA	8.7E-03	1.1E-01
			Tetrachloroethene					Liver	5.2E-01	NA	3.1E-01	8.3E-01
			Antimony					Whole Body, Blood	2.3E-01	NA	8.1E-03	2.4E-01
			Iron					Gastrointestinal	2.1E-01	NA	1.1E-03	2.1E-01
			Chemical Total						1.1E+00	0.0E+00	3.3E-01	1.4E+00
		Exposure Point Total										1.4E+00
	Exposure Medium Total											1.4E+00
Groundwater Group 1 Total												1.4E+00
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chromium					Not identified	6.9E-01	NA	2.9E-01	9.8E-01
			Chemical Total						6.9E-01	0.0E+00	2.9E-01	9.8E-01
		Exposure Point Total										9.8E-01
	Exposure Medium Total											9.8E-01
Groundwater Group 3 Total												9.8E-01
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	cis-1,2-Dichloroethene					Blood	4.4E-01	NA	3.9E-02	4.8E-01
			Vinyl chloride					Liver	2.1E-01	NA	5.0E-02	2.6E-01
			Chemical Total						6.5E-01	0.0E+00	8.9E-02	7.4E-01
		Exposure Point Total										7.4E-01
	Exposure Medium Total											7.4E-01
Groundwater Group 4 Total												7.4E-01
Receptor Total								**Receptor HI Total**				**1.4E+00**

Notes:
CNS - Central nervous system

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

Total Gastrointestinal HI Across All Media =	2.1E-01
Total Blood HI Across All Media =	3.5E-01
Total Liver HI Across All Media =	8.3E-01
Total Whole Body HI Across All Media =	2.4E-01

TABLE H 10.2.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* In Industrial Area	Aluminum					Neurological, Developmental	1.3E-01	NA	3.7E-04	1.3E-01
			Chemical Total						1.3E-01	0.0E+00	3.7E-04	1.3E-01
		Exposure Point Total										1.3E-01
	Exposure Medium Total											1.3E-01
Soil* in Industrial Area Total												1.3E-01
Soil*	Soil*	Soil* in Flight Line Area	Aluminum					Neurological, Developmental	2.6E-01	NA	7.4E-04	2.7E-01
			Arsenic					Skin, Vascular	4.8E-01	NA	4.0E-02	5.2E-01
			Chromium					Not identified	1.5E-01	NA	1.6E-02	1.6E-01
			Iron					Gastrointestinal	2.5E-01	NA	7.1E-04	2.5E-01
			Vanadium					Hair, Blood	1.5E-01	NA	1.6E-02	1.7E-01
			Chemical Total						1.3E+00	0.0E+00	7.4E-02	1.4E+00
		Exposure Point Total										1.4E+00
	Exposure Medium Total											1.4E+00
Soil* in Flight Line Area Area Total												1.4E+00
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	2-Hexanone					Nervous System	1.8E-01	NA	7.4E-03	1.9E-01
			cis-1,2-Dichloroethene					Blood	2.3E-01	NA	2.0E-02	2.5E-01
			Tetrachloroethene					Liver	1.2E+00	NA	7.1E-01	1.9E+00
			Vinyl chloride					Liver	2.1E-01	NA	1.2E-02	2.2E-01
			Antimony					Whole Body, Blood	5.4E-01	NA	2.4E-02	5.7E-01
			Iron					Gastrointestinal	4.8E-01	NA	3.2E-03	4.9E-01
			Chemical Total						2.9E+00	0.0E+00	7.7E-01	3.6E+00
		Exposure Point Total										3.6E+00
	Exposure Medium Total											3.6E+00
Groundwater Group 1 Total												3.6E+00

TABLE H 10.2.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chromium					Not identified	1.6E+00	NA	8.6E-01	2.5E+00
			Chemical Total						1.6E+00	0.0E+00	8.6E-01	2.5E+00
		Exposure Point Total										2.5E+00
	Exposure Medium Total											2.5E+00
Groundwater Group 3 Total												2.5E+00
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	cis-1,2-Dichloroethene					Blood	1.0E+00	NA	9.0E-02	1.1E+00
			Vinyl chloride					Liver	4.8E-01	NA	1.2E-01	6.0E-01
			Chemical Total						1.5E+00	0.0E+00	2.1E-01	1.7E+00
		Exposure Point Total										1.7E+00
	Exposure Medium Total											1.7E+00
Groundwater Group 4 Total												1.7E+00
Groundwater	Groundwater Group 5	Upper Aquifer Plume 2 Tap Water	cis-1,2-Dichloroethene					Blood	1.9E-01	NA	1.7E-02	2.1E-01
			Chemical Total						1.9E-01	0.0E+00	1.7E-02	2.1E-01
		Exposure Point Total										2.1E-01
	Exposure Medium Total											2.1E-01
Groundwater Group 5 Total												2.1E-01
Receptor Total								**Receptor HI Total**				**5.1E+00**

Notes:
CNS - Central nervous system

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

Total Neurological HI Across All Media =	5.8E-01
Total Developmental HI Across All Media =	4.0E-01
Total Skin HI Across All Media =	5.2E-01
Total Vascular HI Across All Media =	5.2E-01
Total Gastrointestinal HI Across All Media =	7.4E-01
Total Hair HI Across All Media =	1.7E-01
Total Blood HI Across All Media =	2.1E+00
Total Liver HI Across All Media =	2.7E+00
Total Whole Body HI Across All Media =	5.7E-01

TABLE H 10.3.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future	
Receptor Population: Resident	
Receptor Age: Child/Adult	

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Benzo(a)anthracene	4.7E-07	NA	1.2E-06	1.7E-06					
			Benzo(a)pyrene	3.6E-06	NA	9.1E-06	1.3E-05					
			Benzo(b)fluoranthene	4.9E-07	NA	1.2E-06	1.7E-06					
			Arsenic	3.5E-06	NA	3.3E-07	3.8E-06					
			Chemical Total	8.0E-06	0.0E+00	1.2E-05	2.0E-05					
		Exposure Point Total					2.0E-05					
	Exposure Medium Total						2.0E-05					
Soil* in Industrial Area Total							2.0E-05					
Soil*	Soil*	Soil* in Flight Line Area	Benzo(a)pyrene	3.0E-06	NA	7.6E-06	1.1E-05					
			Benzo(b)fluoranthene	3.7E-07	NA	9.3E-07	1.3E-06					
			Arsenic	2.6E-05	NA	2.5E-06	2.9E-05					
			Chromium	1.1E-04	NA	5.6E-08	1.2E-04					
			Chemical Total	1.4E-04	0.0E+00	1.1E-05	1.6E-04					
		Exposure Point Total					1.6E-04					
	Exposure Medium Total						1.6E-04					
Soil* in Flight Line Area Area Total							1.6E-04					
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	Benzene	1.9E-06	NA	2.8E-07	2.1E-06					
			Tetrachloroethene	1.5E-03	NA	9.1E-04	2.4E-03					
			Trichloroethene	4.0E-06	NA	6.6E-07	4.6E-06					
			Vinyl chloride	1.1E-04	NA	5.7E-06	1.1E-04					
			Chemical Total	1.6E-03	0.0E+00	9.1E-04	2.6E-03					
		Exposure Point Total					2.6E-03					
	Exposure Medium Total						2.6E-03					
	Groundwater Group 1	Surficial Aquifer Water Vapors at Showerhead	Tetrachloroethene	NA	2.7E-05	NA	2.7E-05					
			Trichloroethene	NA	2.4E-06	NA	2.4E-06					
			Vinyl chloride	NA	1.7E-06	NA	1.7E-06					
			Chemical Total	0.0E+00	3.1E-05	0.0E+00	3.1E-05					
		Exposure Point Total					3.1E-05					
	Exposure Medium Total						3.1E-05					
Groundwater Group 1 Total							2.6E-03					

TABLE H 10.3.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future	
Receptor Population: Resident	
Receptor Age: Child/Adult	

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 2	Middle Castle-Hayne Aquifer - Tap Water	Tetrachloroethene	1.9E-05	NA	1.1E-05	3.1E-05					
			Chemical Total	1.9E-05	0.0E+00	1.1E-05	3.1E-05					
			Exposure Point Total				3.1E-05					
			Exposure Medium Total				3.1E-05					
			Groundwater Group 2 Total				3.1E-05					
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Benzo(a)pyrene	6.8E-05	NA	1.4E-03	1.5E-03					
			Benzo(b)fluoranthene	1.3E-05	NA	2.8E-04	2.9E-04					
			Benzo(k)fluoranthene	1.1E-06	NA	2.1E-05	2.2E-05					
			Dibenz(a,h)anthracene	1.9E-04	NA	6.6E-05	2.5E-04					
			Indeno(1,2,3-cd)pyrene	1.5E-05	NA	1.5E-06	1.7E-05					
			Chromium	1.8E-03	NA	5.4E-07	1.8E-03					
			Chemical Total	2.0E-03	0.0E+00	1.8E-03	3.9E-03					
			Exposure Point Total				3.9E-03					
			Exposure Medium Total				3.9E-03					
	Groundwater Group 3	Middle Castle-Hayne Water Vapors at Showerhead	Chloroform	NA	9.9E-06	NA	9.9E-06					
			Chemical Total	0.0E+00	9.9E-06	0.0E+00	9.9E-06					
			Exposure Point Total				9.9E-06					
			Exposure Medium Total				9.9E-06					
			Groundwater Group 3 Total				3.9E-03					
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Benzene	1.5E-06	NA	1.2E-06	2.7E-06					
			Trichloroethene	1.4E-05	NA	1.8E-05	3.2E-05					
			Vinyl chloride	2.4E-04	NA	5.9E-05	3.0E-04					
			Chemical Total	2.6E-04	0.0E+00	7.9E-05	3.4E-04					
			Exposure Point Total				3.4E-04					
			Exposure Medium Total				3.4E-04					
			Groundwater Group 4 Total				3.4E-04					

TABLE H 10.3.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future	
Receptor Population: Resident	
Receptor Age: Child/Adult	

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 5	Upper Aquifer	Tetrachloroethene	2.3E-06	NA	1.3E-06	3.6E-06					
		Plume 2	Trichloroethene	1.2E-05	NA	2.0E-06	1.4E-05					
		Tap Water	Vinyl chloride	4.1E-06	NA	2.2E-07	4.3E-06					
			Chemical Total	1.9E-05	0.0E+00	3.6E-06	2.2E-05					
		Exposure Point Total					2.2E-05					
	Exposure Medium Total						2.2E-05					
	Groundwater Group 5	Upper Aquifer	Trichloroethene	NA	1.4E-06	NA	1.4E-06					
		Plume 2 - Water Vapors at Showerhead										
			Chemical Total	0.0E+00	1.4E-06	0.0E+00	1.4E-06					
		Exposure Point Total					1.4E-06					
	Exposure Medium Total						1.4E-06					
Groundwater Group 5 Total							2.4E-05					
Receptor Total							**4.0E-03**	**Receptor HI Total**				

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

TABLE H 10.4.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Military Personnel
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil*	Soil*	Soil* in Industrial Area	Chromium					Not identified	4.9E-03	NA	1.3E-03	6.1E-03
			Chemical Total						4.9E-03	0.0E+00	1.3E-03	6.1E-03
		Exposure Point Total										6.1E-03
	Exposure Medium Total											6.1E-03
Soil* In Industrial Area Total												6.1E-03
Soil*	Soil*	Soil* in Flight Line Area	Aluminum					Neurological, Developmental	2.0E-02	NA	4.0E-03	2.4E-02
			Arsenic					Skin, Vascular	3.6E-02	NA	2.4E-04	3.7E-02
			Chromium					Not identified	1.1E-02	NA	3.0E-03	1.4E-02
			Iron					Gastrointestinal	1.9E-02	NA	1.3E-04	1.9E-02
			Vanadium					Hair, Blood	1.2E-02	NA	2.9E-03	1.4E-02
			Chemical Total						9.9E-02	0.0E+00	1.0E-02	1.1E-01
		Exposure Point Total										1.1E-01
	Exposure Medium Total											1.1E-01
Soil* in Flight Line Area Area Total												1.1E-01
Receptor Total								**Receptor HI Total**				**1.2E-01**

Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

Total Neurological HI Across All Media =	2.4E-02
Total Developmental HI Across All Media =	2.4E-02
Total Skin HI Across All Media =	3.7E-02
Total Vascular HI Across All Media =	3.7E-02
Total Gastrointestinal HI Across All Media =	1.9E-02
Total Hair HI Across All Media =	1.4E-02
Total Blood HI Across All Media =	1.4E-02

TABLE H 10.5.RME
Risk Summary – Reasonable Maximum Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer	Tetrachloroethene	3.6E-04	NA	NA	3.6E-04					
		Tap Water	Vinyl chloride	2.5E-05	NA	NA	2.5E-05					
			Chemical Total	3.8E-04	0.0E+00	0.0E+00	3.8E-04					
		Exposure Point Total					3.8E-04					
	Exposure Medium Total						3.8E-04					
Groundwater Group 1 Total							3.8E-04					
Groundwater	Groundwater Group 3	Middle Castle-Hayne	Benzo(a)pyrene	5.1E-06	NA	NA	5.1E-06					
		Aquifer - Tap Water	Dibenz(a,h)anthracene	1.4E-05	NA	NA	1.4E-05					
			Indeno(1,2,3-cd)pyrene	1.1E-06	NA	NA	1.1E-06					
			Chromium	1.3E-04	NA	NA	1.3E-04					
			Chemical Total	1.5E-04	0.0E+00	0.0E+00	1.5E-04					
		Exposure Point Total					1.5E-04					
	Exposure Medium Total						1.5E-04					
Groundwater Group 3 Total							1.5E-04					
Groundwater	Groundwater Group 4	Upper Aquifer	cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00					
		Plume 1	Trichloroethene	3.2E-06	NA	NA	3.2E-06					
		Tap Water	Vinyl chloride	5.7E-05	NA	NA	5.7E-05					
			Chemical Total	6.0E-05	0.0E+00	0.0E+00	6.0E-05					
		Exposure Point Total					6.0E-05					
	Exposure Medium Total						6.0E-05					
Groundwater Group 4 Total							6.0E-05					
Receptor Total							**3.8E-04**					

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

TABLE H 10.1.CTE
Risk Summary – Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	2-Hexanone					Nervous System	1.2E-01	NA	2.8E-03	1.2E-01
			cis-1,2-Dichloroethene					Blood	1.5E-01	NA	7.5E-03	1.6E-01
			Tetrachloroethene					Liver	8.1E-01	NA	2.7E-01	1.1E+00
			Vinyl chloride					Liver	1.4E-01	NA	4.1E-03	1.5E-01
			Antimony					Whole Body, Blood	3.6E-01	NA	5.3E-03	3.7E-01
			Iron					Gastrointestinal	3.2E-01	NA	7.0E-04	3.2E-01
			Chemical Total						1.9E+00	0.0E+00	2.9E-01	2.2E+00
		Exposure Point Total										2.2E+00
	Exposure Medium Total											2.2E+00
Groundwater Group 1 Total												2.2E+00
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Chromium					Not identified	1.1E+00	NA	1.9E-01	1.3E+00
			Chemical Total						1.1E+00	0.0E+00	1.9E-01	1.3E+00
		Exposure Point Total										1.3E+00
	Exposure Medium Total											1.3E+00
Groundwater Group 3 Total												1.3E+00
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	cis-1,2-Dichloroethene					Blood	6.9E-01	NA	3.3E-02	7.2E-01
			Vinyl chloride					Liver	3.2E-01	NA	4.3E-02	3.6E-01
			Chemical Total						1.0E+00	0.0E+00	7.7E-02	1.1E+00
		Exposure Point Total										1.1E+00
	Exposure Medium Total											1.1E+00
Groundwater Group 4 Total												1.1E+00
Receptor Total								**Receptor HI Total**				**2.2E+00**

Generated By: D.Stannard/DAY
Checked By: G.Howard-Peebles/DAY

Total Neurological HI Across All Media =	1.2E-01
Total Gastrointestinal HI Across All Media =	3.2E-01
Total Blood HI Across All Media =	5.3E-01
Total Liver HI Across All Media =	1.2E+00
Total Whole Body HI Across All Media =	3.7E-01

TABLE H 10.2.CTE
Risk Summary – Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer Tap Water	Tetrachloroethene	5.5E-04	NA	2.2E-04	7.7E-04					
			Trichloroethene	1.4E-06	NA	1.6E-07	1.6E-06					
			Vinyl chloride	3.8E-05	NA	1.3E-06	3.9E-05					
			Chemical Total	5.8E-04	0.0E+00	2.2E-04	8.1E-04					
		Exposure Point Total					8.1E-04					
	Exposure Medium Total						8.1E-04					
Groundwater Group 1 Total							8.1E-04					
Groundwater	Groundwater Group 3	Middle Castle-Hayne Aquifer - Tap Water	Benzo(a)pyrene	7.8E-06	NA	1.1E-04	1.2E-04					
			Benzo(b)fluoranthene	1.5E-06	NA	2.2E-05	2.3E-05					
			Benzo(k)fluoranthene	1.2E-07	NA	1.7E-06	1.8E-06					
			Dibenz(a,h)anthracene	2.1E-05	NA	5.2E-06	2.7E-05					
			Indeno(1,2,3-cd)pyrene	1.7E-06	NA	1.2E-07	1.9E-06					
			Chromium	2.0E-04	NA	2.5E-08	2.0E-04					
			Chemical Total	2.3E-04	0.0E+00	1.4E-04	3.8E-04					
		Exposure Point Total					3.8E-04					
	Exposure Medium Total						3.8E-04					
Groundwater Group 3 Total							3.8E-04					
Groundwater	Groundwater Group 4	Upper Aquifer Plume 1 Tap Water	Trichloroethene	4.9E-06	NA	3.8E-06	8.7E-06					
			Vinyl chloride	8.6E-05	NA	1.4E-05	1.0E-04					
			Chemical Total	9.1E-05	0.0E+00	1.8E-05	1.1E-04					
		Exposure Point Total					1.1E-04					
	Exposure Medium Total						1.1E-04					
Groundwater Group 4 Total							1.1E-04					
Receptor Total							**8.1E-04**	**Receptor HI Total**				

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

TABLE H 10.3.CTE
Risk Summary – Central Tendency Exposure
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Group 1	Surficial Aquifer	1,1-Dichloroethane	5.0E-09	NA	NA	5.0E-09	Kidney	3.4E-05	NA	NA	3.4E-05
		Tap Water	2-Hexanone	NA	NA	NA	0.0E+00	Nervous System	2.4E-02	NA	NA	2.4E-02
			Benzene	1.4E-07	NA	NA	1.4E-07	Blood, Immune	4.9E-03	NA	NA	4.9E-03
			Chloroform	2.4E-08	NA	NA	2.4E-08	Liver	5.9E-04	NA	NA	5.9E-04
			cis-1,2-Dichloroethene	NA	NA	NA	0.0E+00	Blood	3.1E-02	NA	NA	3.1E-02
			Dichlorodifluoromethane (Freon-12)	NA	NA	NA	0.0E+00	None Observed	2.8E-04	NA	NA	2.8E-04
			Ethylbenzene	1.1E-08	NA	NA	1.1E-08	Liver, Kidney	7.9E-05	NA	NA	7.9E-05
			Tetrachloroethene	1.1E-04	NA	NA	1.1E-04	Liver	1.6E-01	NA	NA	1.6E-01
			Trichloroethene	2.9E-07	NA	NA	2.9E-07	NA	NA	NA	NA	0.0E+00
			Vinyl chloride	7.9E-06	NA	NA	7.9E-06	Liver	2.8E-02	NA	NA	2.8E-02
			Naphthalene	NA	NA	NA	0.0E+00	Decreased Body Weight	8.1E-05	NA	NA	8.1E-05
			Antimony	NA	NA	NA	0.0E+00	Whole Body, Blood	7.3E-02	NA	NA	7.3E-02
			Iron	NA	NA	NA	0.0E+00	Gastrointestinal	6.5E-02	NA	NA	6.5E-02
			Chemical Total	1.2E-04	0.0E+00	0.0E+00	1.2E-04		3.9E-01	0.0E+00	0.0E+00	3.9E-01
		Exposure Point Total					1.2E-04					3.9E-01
	Exposure Medium Total						1.2E-04					3.9E-01
Groundwater Group 1 Total							1.2E-04					3.9E-01

Notes:
CNS - Central nervous system

Generated By: D.Stannard/DAY

Checked By: G.Howard-Peebles/DAY

Total Neurological HI Across All Media =	2.4E-02
Total Gastrointestinal HI Across All Media =	6.5E-02
Total Blood HI Across All Media =	1.1E-01
Total Immune HI Across All Media =	4.9E-03
Total Liver HI Across All Media =	1.9E-01
Total Body Weight HI Across All Media =	8.1E-05
Total Whole Body HI Across All Media =	7.3E-02

Appendix I
Ecological Risk Assessment

APPENDIX I

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1990. *Toxicological profile for silver*. December.

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. *Toxicological profile for polycyclic aromatic hydrocarbons (PAHs)*. August.

Baker Environmental, Inc. 2001. *Final Base Background Study (Soil), Marine Corps Base Camp Lejeune, North Carolina*. April.

Bechtel Jacobs. 1998. *Empirical models for the uptake of inorganic chemicals from soil by plants.* Prepared for U.S. Department of Energy. BJC/OR-133. September 1998.

Beyer, W.N. and C. Stafford. 1993. Survey and evaluation of contaminants in earthworms and in soil derived from dredged material at confined disposal facilities in the Great Lakes Region. *Environmental Monitoring and Assessment.* 24:151-165.

Beyer, W.N., E.E. Connor, and S. Gerould. 1994. Estimates of soil ingestion by wildlife. *Journal of Wildlife Management.* 58:375-382.

Buchman, M. F. 2008. *National Oceanic Atmosphere Administration (NOAA) Screening Quick Reference Tables.* Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration. Seattle, WA. 1999, Last Revised November.

California Department of Toxic Substance Control (CDTSC). 2006. *Environmental Chemistry Laboratory User's Manual.* Appendix C.

Department of the Navy (Navy). 2003. *Navy Guidance for Conducting Ecological Risk Assessments.* Originally published April 5, 1999. Website version last updated February 28, 2003. http://web.ead.anl.gov/ecorisk/process/pdf/index.cfm.

Eisler, R. 1996. *Silver hazards to fish, wildlife, and invertebrates: a synoptic review.* National Biological Service, Biological Report 32, Contaminant Hazard Reviews Report 32. 44 pp.

Ingersoll, C.G., P.S. Haverland, E.L. Brunson, T.J. Canfield, F.J. Dwyer, C.E. HenkeN.E. Kemble, D.R. Mount, and R.G. Fox. 1996. Calculation and evaluation of sediment effect concentrations for the amphipod *Chironomus riparius*. *Journal of Great Lakes Research* 22:602-623.

Levey, D.J. and W.H. Karasov. 1989. Digestive responses of temperate birds switched to fruit or insect diets. *Auk.* 106:675-686.

Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. *American wildlife and plants: a guide to wildlife food habits.* Dover Publications, Inc. New York, NY. 500 pp.

North Carolina Department of Environment and Natural Resources (NCDENR). 2003. *Guidelines for Performing Screening Level Ecological Risk Assessments within the North Carolina Division of Waste Management*.

Persaud, D., R. Jaagumagi, and A. Hayton. 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Water Resources Branch, Ontario Ministry of the Environment. Toronto.

Rigdon, R.H. and J. Neal. 1963. *Fluorescence of chickens and eggs following the feeding of benzpyrene crystals.* Texas Reports on Biology and Medicine 21(4):558-566.

Sample, B.E. and G.W. Suter II. 1994. *Estimating exposure of terrestrial wildlife to contaminants.* Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-125.

Sample, B. E., D. M. Opresko, and G. W. Suter II. 1996. *Toxicological Benchmarks for Wildlife*: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, Tennessee. ES/ER/TM-86/R3.

Sample, B.E., M.S. Aplin, R.A. Efroymson, G.W. Suter II, and C.J.E. Welsh. 1997. *Methods and tools for estimation of the exposure of terrestrial wildlife to contaminants.* Environmental Sciences Division, Oak Ridge National Laboratory. ORNL/TM-13391.

Sample, B.E., J.J. Beauchamp, R.A. Efroymson, G.W. Suter II, and T.L. Ashwood. 1998. *Development and validation of bioaccumulation models for earthworms.* Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-220.

Silva, M. and J.A. Downing. 1995. *CRC handbook of mammalian body masses*. CRC Press, Boca Raton, FL. 359 pp.

Suter, G. W., II, R. A. Efroymson, B. E. Sample, and D. S. Jones. 2000. *Ecological Risk Assessment for Contaminated Sites.* CRC Press.

Texas Council of Environmental Quality (TCEQ). 2006. Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites In Texas RG-263 (Revised). Remediation Division. January.

Tomlinson, R.E., D.D. Dolton, R.R. George, and R.E. Mirarchi. 1994. *Mourning dove.* Pages 5-26 IN Tacha, T.C. and C.E. Braun (eds). *Migratory shore and upland game bird management in North America.* Allen Press, Lawrence, KS. 223 pp.

United States Department of Agriculture, Soil Conservation Service. 1992. Soil Survey of Onslow County, North Carolina.U.S. Environmental Protection Agency (USEPA). 1993. *Wildlife exposure factors handbook. Volume I of II.* EPA/600/R-93/187a.

USEPA. 1995a. *Great Lakes Water Quality Initiative criteria documents for the protection of wildlife: DDT, mercury, 2,3,7,8-TCDD, PCBs.* EPA/820/B-95/008.

USEPA. 1995b. Internal report on summary of measured, calculated and recommended log Kow values. Environmental Research Laboratory, Athens, GA. 10 April.

USEPA. 1997. *Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments. Interim Final.* EPA 540-R-97-006. June.

USEPA. 2000. *Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment: Status and Needs.* Bioaccumulation Analysis Workgroup, Washington D.C. EPA/823/R-00/001.

USEPA. 2001. *Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment*. Originally published November 1995. Website version last updated November 30, 2001: http://www.epa.gov/region4/waste/ots/ecolbul.htm.

USEPA. 2003. Region 5 RCRA Ecological Screening Levels. August 22, 2003. http://www.epa.gov/reg5rcra/ca/ESL

USEPA. 2005. *Guidance for developing ecological soil screening levels. Attachment 4-1.* OSWER Directive 9285.7-55. February.

USEPA. 2009a. *Ecological Soil Screening Levels.* http://www.epa.gov/ecotox/ecossl/

USEPA. 2009b. *National Recommended Water Quality Criteria.* http://www.epa.gov/waterscience/criteria/wqctable/

USEPA. 2009c. *ProUCL Version 4.00.04 User Guide.* Draft. EPA/600/R-07/038. February.

CHECKLIST FOR ECOLOGICAL ASSESSMENTS/SAMPLING

I. SITE LOCATION

1. Site Name_United States Marine Corps Base (MCB), Camp Lejeune _____
   US EPA ID Number _____
   Location_____Operable Unit 20 - Site 86_____
   County Onslow_____ City Jacksonville_____ State NC_____

2. Latitude___34°43'06.19" N_____ Longitude__77°26'40.74" W_____

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known and suspected release areas, sampling locations and any other important features, if available. Figure 3-4 is an aerial showing site boundaries and surface soil sampling locations. Figure 3-8 is an aerial showing site boundaries and recent surface water, groundwater, and sediment sampling locations.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft.) The site is approximately 146 acres.

2. Is this the first site visit? ☐ Yes X No
   If no, attach trip report of previous site visit(s), if available.
   No trip report is available.

   Dates(s) of previous site visit(s) CH2M HILL conducted investigations on several dates in 2006-2009.

3. Are aerial or other site photographs available? X Yes ☐ No
   If yes, please attach any available photo(s) to the site map to the report.
   Figure 2-3 of this report.

4. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_40__% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	_60__% Other[c]

[a]For recreational areas, please describe the use of the area (e.g., park, playing field, etc).
_____

[b]For agricultural areas, please list the crops and/or livestock which are present.

_____

[c]For areas designated as "other," please describe the use of the area.
The southern area of the site is a paved flight line, a pond is located in the western end of the site, and the eastern area is open field.

5. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: _____0.5 mile radius_____

_____% Heavy Industrial	__45_% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_5___% Recreational[a]	_50__% Undisturbed	_____% Other [c]

[a]For recreational areas, please describe the use of the area (e.g., park, playing field, golf course, etc).
Tennis courts are located approximately 0.12 miles north of the site.

[b]For agricultural areas, please list the crops and/or livestock which are present.
_____

[c]For areas designated as "other," please describe the use of the area.
_____

6. Has any movement of soil taken place at the site? ☐ Yes X No
If yes, indicate the likely source of the disturbance, (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) degree of disturbance, and estimate when these events occurred.

7. Do any sensitive environmental areas exist adjacent to or in proximity to the site, (e.g. Federal and State parks, National and State monuments, wetlands)? *Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information. See Table 1 for a list of contacts.*
Wetlands are located approximately 400 ft. east of the site.

Please provide the source(s) of information used to identify these sensitive areas, and indicate their general location on the site map.
United States Marine Corps (USMC). 2006. Integrated Natural Resource Management Plan (INRMP) 2007-2011, Marine Corps Base Camp Lejeune, Onslow County, North Carolina. November.

8. What type of facility is located at the site?

☐ Chemical ☐ Manufacturing ☐ Mixing

☐ Waste Disposal X Other (specify)
The site is predominantly light industrial with buildings and parking lots. The southern area of the site is a paved flight line. A retention pond is located in the western portion of the site, and the eastern portion is an open field area.

9. Identify the contaminants of potential concern (COPCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc).
VOCs, SVOCs, pesticides, and inorganics were detected in surface soil, surface water (drainage ditch), groundwater, and sediment in both the western pond and drainage ditch. Inorganics were detected in subsurface soil and in the western pond surface water Please see the ERA for concentration information.

10. Check any potential routes of off-site migration of contaminants observed at the site:

☐ Swales ☐ Depressions X Drainage Ditches

X Runoff ☐ Windblown Particulates ☐ Vehicular Traffic

X Other (specify): Groundwater

11. Indicate the approximate depth to groundwater (in feet mean sea level [(msl)].
Depth to groundwater ranges from approximately 4 to 15 ft msl.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
Water level measurement data suggests that groundwater generally flows east.__

13. Is the direction of surface runoff apparent from site observations? X Yes ☐ No
If yes, to which of the following does the surface runoff discharge? Indicate all that apply.

X Surface water X Groundwater ☐ Sewer

X Collection Impoundment

14. Is there a navigable water body or tributary to a navigable water body?
X Yes ☐ No

15. Is there a water body anywhere on or in the vicinity of the site? If yes, also complete Section III.B.1: Aquatic Habitat Checklist -- Non-Flowing Systems and/or Section III.B.2: Aquatic Habitat Checklist -- Flowing Systems.

X Yes ☐ No

16. Is there evidence of flooding? ☐ Yes X No
Wetlands and flood plains are not always obvious. Do not answer "no" without confirming information. If yes, complete Section III.C: Wetland Habitat Checklist.

17. If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. (Use a blank sheet if additional space is needed for text.)

18. Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? ☐ Yes X No
If yes, you are required to verify this information with the U.S. Fish and Wildlife Service or other appropriate agencies (see Table 1 for a list of contacts). If species' identities are known, please list them next.

19. Record weather conditions at the site at the time of the site visit when information for completion of this checklist was prepared:

DATE June 2009

80°F Temperature (°C/°F)

Wind (direction/speed):

Cloud Cover: Mostly Sunny

Normal daily high temperature (°C/°F):

Precipitation (rain, snow): None

20. Describe reasonable and likely future land and/or water use(s) at the site.
MCB Camp Lejeune is planning a military construction (MILCON) project in the vicinity of the site.

21. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).
Site 86 served as a storage area for petroleum products between 1954 and 1988. In 1954, three 25,000 gallon Above Ground Storage Tanks (ASTs) were installed within an earthen berm onsite. A small pump house was also constructed to transfer oil to and from the ASTs. The three storage tanks were reportedly used for No. 6 fuel oil storage until 1979 (Dolph, 2000). From 1979 to 1988 the three tanks were reportedly used for temporary storage of waste oil (O'Brien & Gere, 1992) and were emptied in 1988. The tanks were removed in 1992 (CH2M HILL, 2003). The flight line at MCAS New River has been in service since 1951. Over time, the surrounding area has been developed to provide support for aircraft and personnel, which includes Site 86.

O'Brien & Gere, Inc. June 1992. Site Assessment of Tanks AS419 - AS421, Marine Corps Air Station, New River, North Carolina. Prepared for the Department of the Navy, Naval Facilities Engineering Command, Atlantic Division, Norfolk, Virginia. Project No. 62470-90-R-76.

CH2M HILL. 2003. Technology Evaluation Operable Unit No. 20 (Site 86). March..

22. Identify the media (e.g., soil [surface or subsurface], surface water, air, groundwater) which are known or suspected to contain COCs.
Surface soil, subsurface soil, surface water, groundwater, and sediment are suspected to contain COPCs.

II.A. SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.
Soil and groundwater, soil and surface water, surface water and sediment exposure pathways may be complete.

Checklist Completed by__Sara Kent_____

Affiliation__CH2M HILL_____

Author Assisted by_____

Date__5/17/2010_____

III. HABITAT EVALUATION

III.A Terrestrial Habitat Checklist

III.A.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.A.2: Shrub/Scrub

III.A.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.A.3: Open Field

III.A.3 Open Field

Are any open field areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the open field area on the attached site map and answer the following questions. If more than one open field area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual open field area. Distinguish between open field areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.A.4: Miscellaneous

Open Field Area Questions

X On-site ☐ Off-site

Name or Designation: Unknown

1. Estimate the approximate size of the open field area (40%) Please identify what information was used to determine the open field area of the site. Figure 2-3 and site photo collected during field activities show open area covered with mown grass.

2. Indicate the dominant type of vegetation present, if known. Mowed grasses, dominant species unknown

3. Estimate the vegetation density of the shrub/scrub area.

- ☐ Dense (i.e., greater than 75% vegetation)
- X Moderate (i.e., 25% to 75% vegetation)
- ☐ Sparse (i.e., less than 25% vegetation)

4. Indicate the approximate average height of the dominant plant: 2-6 inches

III.A.4 Miscellaneous

Are other types of terrestrial habitats present at the site, other than woods, scrub/shrub and open field? ☐ Yes X No

If yes, indicate the area on the attached site map and answer the following questions. If more than one of these areas are present on or adjacent to the site, make additional copies of the following questions and fill out for each individual area. Distinguish between areas by using names or other designations. Clearly identify each area on the site map.

If no, proceed to Section III.B: Aquatic Habitats.

III.B Aquatic Habitats

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section III.C, Wetland Habitat Checklist.

III.B.1 Non-Flowing Systems

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

X Yes ☐ No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations. Clearly identify each area on the site map.

If no, proceed to Section III.B.2: Flowing Systems

Non-Flowing Aquatic Feature Questions

X On-site ☐ Off-site

Name or Designation: Retention pond

1. Indicate the type of aquatic feature present:

   ☐ Natural (e.g., pond or lake)
   X Man-made (e.g., impoundment, lagoon, canal, etc.)

2. Estimate the approximate size of the water body (in acres or sq. ft.) 2 acres

3. If known, indicate the depth of the water body (in ft. or in.)._Unknown_____

4. If a water body is present, what are its known uses (e.g.: recreation, navigation, etc.)?
   Stormwater detention pond.

5. Is aquatic vegetation present? X Yes ☐ No
   If yes, please identify the type of vegetation present if known.

   ☐ Emergent ☐ Submergent X Floating

6. Indicate the general composition of the bottom substrate. Mark all sources that apply from the following list.

☐ Bedrock	X Sand	☐ Concrete
☐ Boulder (>10 in.)	X Silt	☐ Debris
☐ Cobble (2.5 - 10 in.)	X Clay	☐ Detritus
☐ Gravel (0.1 - 2.5 in.)	X Muck (fine/black)	

X Other (please specify):_____Fill material_____

7. Indicate the source(s) of the water in the aquatic feature. Mark all sources that apply from the following list.

   ☐ River/Stream/Creek
   ☐ Groundwater
   ☐ Industrial Discharge
   X Surface Runoff
   ☐ Other (please specify):_____

8. Is there a discharge from the facility to the aquatic feature? X Yes ☐ No
   If yes, describe the origin of each discharge and its migration path.
   Stormwater runoff and surface water from the western area of the site discharges to the retention pond._

9. Does the aquatic feature discharge to the surrounding environment? X Yes ☐ No
   If yes, indicate the features from the following list into which the aquatic feature discharges, and indicate whether the discharge occurs onsite or offsite:

☐ River/Stream/Creek	☐ on-site	☐ off-site
X Groundwater	X on-site	☐ off-site
☐ Wetland	☐ on-site	☐ off-site
☐ Impoundment	☐ on-site	☐ off-site

X Other (please describe)_water from the pond discharges to a series of ditches and the base's wastewater treatment plant.

Non-Flowing Aquatic Feature Questions (Continued)

10. Identify any field measurements and observations of water quality that were made. Provide the measurement and the units of measure in the appropriate space below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of water where the reading was taken)_____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque)
(Secchi disk depth_____)

_____ Other (specify)

11. Describe observed color and area of coloration. None observed

12. Mark the open-water, non-flowing system on the site map attached to this checklist.

13. What observations, if any, were made at the water body regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc? Frogs, turtles, and fish

III.B.2 Flowing Systems

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section III.C, Wetland Habitat Checklist.

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site? X Yes ☐ No

If yes, indicate the system on the attached site map and answer the following questions regarding the flowing system. If more than one flowing system is present on or adjacent to the site, make additional copies of the following questions and complete one set for each individual aquatic feature. Distinguish between flowing systems by using names or other designation. Clearly identify each area on the site map. Figure 3-2 Topographic Map

If no, proceed to Section III.C: Wetlands Habitats.

Flowing Aquatic Systems Questions

X On-site ☐ Off-site

Name or Designation:__ _Unknown_____

1. Indicate the type of flowing aquatic feature present.

   - ☐ River
   - ☐ Stream/Creek/Brook
   - ☐ Intermittent stream
   - X Artificially created (ditch, etc.)
   - ☐ Channeling
   - ☐ Other (specify)

2. For natural systems, are there any indicators of physical alteration (e.g., channeling, debris, etc.)? ☐ Yes X No
   If yes, please describe the indicators observed.

3. Indicate the general composition of the bottom substrate.

☐ Bedrock	X Sand (course)	☐ Concrete
☐ Boulder (>10 in.)	X Silt (fine)	☐ Debris
☐ Cobble (2.5 - 10 in.)	☐ Clay (slick)	☐ Detritus
☐ Gravel (0.1 - 2.5 in.)	X Muck (fine/black)	☐ Marl (Shells)

   ☐ Other (please specify):_____

4. Describe the condition of the bank (e.g., height, slope, extent of vegetative cover).
   Banks were vegetated with mowed grasses and had a 1:2 slope

5. Is the system influenced by tides? ☐ Yes X No
   What information was used to make this determination?
   Tide charts and NWI maps
   (http://www.tides.info/?command=view&location=New+River+Inlet%2C+North+Carolina)

6. Is the flow intermittent? X Yes ☐ No
   If yes, please note the information used to make this determination. Field observations

7. Is there a discharge from the site to the water body? X Yes ☐ No X Unknown
   If yes, describe the origin of each discharge and its migration path. Stormwater and suface water runoff from the eastern and southern areas of the site discharge to the ditch.

8. Indicate the discharge point of the water body. Specify name of the discharge, if known. The stream discharges to the New River approximately 0.2 miles southeast of the site.

9. Identify any field measurements and observations of water quality that were made. Provide the measurement and the units of measure in the appropriate space below:

_____ Width (ft.)

_____ Depth (average)

_____ Velocity (specify units):_____

_____ Temperature (depth of water where the reading was taken)_____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque)
(Secchi disk depth_____)

_____ Other (specify)

10. Describe observed color and area of coloration. None observed

11. Is any aquatic vegetation present? X Yes ☐ No
If yes, please identify the type of vegetation present, if known.

X Emergent ☐ Submergent ☐ Floating

12. Mark the flowing water system on the attached site map. See figure 3-8.

13. What observations were made at the water body regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc? Frogs and fish were observed in the drainage ditch during the site investigation.

III.C Wetland Habitats

Are any wetland[1] areas such as marshes or swamps on or adjacent to the site?

X Yes ☐ No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out one for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location). Clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination whether or not wetland areas are present.

MCB Camp Lejeune GIS Layer for Wetlands (NWI)

If no wetland areas are present, proceed to Section III.D: Sensitive Environments and Receptors.

Wetland Area Questions

☐ On-site X Off-site

Name or Designation:_Unknown____

1. Indicate the approximate area of the wetland (acres or ft.^{2}) Unknown. Large wetland system bordering the New River (NWI map)

2. Identify the type(s) of vegetation present in the wetland.

- ☐ Submergent (i.e., underwater) vegetation
- ☐ Emergent (i.e., rooted in the water, but rising above it) vegetation
- ☐ Floating vegetation
- X Scrub/shrub
- X Wooded
- ☐ Other (Please describe):_____

[1]Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

3. Provide a general description of the vegetation present in and around the wetland (height, color, etc). Provide a photograph of the known or suspected wetlands, if available.
Unknown. Wetland area not observed during field investigations.

4. Estimate the vegetation density of the wetland area.

- ❑ Dense (i.e., greater than 75% vegetation)
- ❑ Moderate (i.e., 25% to 75% vegetation)
- ❑ Sparse (i.e., less than 25% vegetation)

Unknown. Wetland area not observed during field investigations.

5. Is standing water present? ☐ Yes ☐ No X Unknown (no field observations)
If yes, is the water primarily: ☐ Fresh X Brackish (NWI map)
Indicate the approximate area of the standing water (ft.^{2}) _Unknown__
Indicate the approximate depth of the standing water, if known (ft. or in.)_Unknown

6. Identify any field measurements and observations of water quality that were made. Provide the measurement and the units of measure in the appropriate space below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of water where the reading was taken)_____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque)
(Secchi disk depth_____)

_____ Other (specify)

7. Describe observed color and area of coloration.
Unknown. Wetland area not observed during site investigation.

8. If known, indicate the source of the water in the wetland.

- X Stream/River/Creek/Lake/Pond
- ❑ Flooding
- ❑ Groundwater
- ❑ Surface runoff

9. Is there a discharge from the site to the wetland? X Yes ☐ No

If yes, please describe: The drainage ditch running through the site discharges to the wetlands

10. Is there a discharge from the wetland? X Yes ☐ No

If yes, to what water body is discharge released?

- X Marine (Name: New River)
- ☐ Surface stream/River (Name: _____)
- ☐ Lake/Pond (Name: _____)
- ☐ Groundwater
- ☐ Not sure

11. Does the area show evidence of flooding? X Yes ☐ No

If yes, indicate which of the following are present (mark all that apply).

- ☐ Standing water
- X Water-saturated soils
- ☐ Water marks
- ☐ Buttressing
- ☐ Debris lines
- ☐ Mud cracks
- ☐ Other (Please describe):

12. If a soil sample was collected, describe the appearance of the soil in the wetland area. Circle or write in the best response.

Color (blue/gray, brown, black, mottled) _____

Water content (dry, wet, saturated/unsaturated)_____

13. Mark the observed wetland area(s) on the attached site map. See Figure 4-2

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[2] exist adjacent to or within one-half mile of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and other appropriate agencies. See Table 1 for a list of contacts.*
   Wetlands and are located approximately 400 feet east of the site. This information is based on GIS information (NWI maps) on wetlands and rare species provided by MCB Camp Lejeune and Onslow County and the MCB Camp Lejeune INRMP (INRMP, 2006).

2. Are any areas on or near (i.e., within one-half mile) the site owned or used by local tribes? If yes, describe.
   No

3. Does the site serve or potentially serve as a habitat, foraging area or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and other appropriate agencies. See Table 1 for a list of contacts.*
   No

4. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.
   Unknown.

5. Is the site used by any ecologically[3], recreationally or commercially important species? If yes, explain.
   No

---

[3] Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to Table 2 at the end of this document for examples of sensitive environments.

[3] Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms. These species' functions would not be replaced by more tolerant species or perform a critical ecological function (such as organic matter decomposition) and will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc).

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate and extent of contamination at the site?

   X Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer.
   Data were collected from each medium across the site, providing representative samples for the area of concern.

2. Do existing data provide sufficient information on the nature, rate and extent of contamination in offsite affected areas?

   X Yes
   ❑ No
   ❑ Uncertain
   ❑ No offsite contamination

   Please provide an explanation for your answer.

   See #1 of this section.

3. Do existing data address potential migration pathways of contaminants at the site?

   X Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer.

   Data were collected based on potential migration pathways (i.e. overland flow, leaching, and groundwater transport).

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   X No offsite contamination

   Please provide an explanation for your answer. Concentration of COPCs in groundwater are not expected to be high enough to cause any discernable impact to the New River.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within one-half mile) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

   No

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 1 foot below ground surface (bgs). If yes, explain.

   VOCs, SVOCs, pesticides, and inorganics were detected in areas where receptors may be exposed.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

   Fish and frogs were observed in the retention pond and drainage ditch onsite. A opossum was also observed during the site investigation.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

   Water level measurement data suggests that shallow groundwater within the vicinity of the site generally flows east. The New River is located approximately 0.2 miles east of the site. Should the low level concentrations in groundwater migrate toward the river, concentrations will likely dilute and attenuate to the extent that aquatic receptors would not be at risk.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions.

   Runoff discharging to the retention pond or drainage ditch are potential transport mechanisms.

   What is the approximate distance from the contaminated area to the nearest watercourse?

   - X 0 feet (i.e., contamination has reached a watercourse)
   - ❑ 1-10 feet
   - ❑ 11-20 feet
   - ❑ 21-50 feet
   - ❑ 51-100 feet
   - ❑ 101-200 feet
   - ❑ > 200 feet
   - ❑ > 500 feet
   - ❑ > 1000 feet

What is the slope of the ground in the contaminated area?

X 0-10%
❑ 10-30%
❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

X < 25%
❑ 25-75%
❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

❑ Yes
X No
❑ Do not know

Do any structures, pavement or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

❑ Yes
❑ No
X Do not know

Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

Yes, contaminants were detected in the surface soil. When the proposed MILCON construction commences, dust may be a concern.

Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No

TABLE I-1

Threatened and Endangered Species List for Onslow County, North Carolina

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Scientific Name	Common Name	Federal Status
Vertebrates		
Chelonia mydas	Green sea turtle	T
Caretta caretta	Loggerhead sea turtle	T
Dermochelys coriacea	Leatherback sea turtle	E
Trichechus manatus	West Indian manatee	E
Charadrius melodus	Piping plover	T
Haliaetus leucocephalus	Bald eagle	T
Puma concolor couguar	Eastern cougar	E
Picoides borealis	Red-cockaded woodpecker	E
Vascular Plants		
Thalictrum cooleyi	Cooley's meadowrue	E
Carex lutea	Golden sedge	E
Lindera melissifolia	Pondberry	E
Lysimachia asperulaefolia	Rough-leaved loosestrife	E
Amaranthus pumilus	Seabeach amaranth	T

Notes:

E - Endangered - A taxon in danger of extinction throughout all or a significant portion of its range.

T - Threatened - A taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

T(S/A) - Threatened due to similarity of appearance: a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened.

Generated By: S.Kent/ATL

Checked By: J.Weier/ATL

TABLE I-2
Sample Locations Used in the Ecological Risk Assessment (ERA) for Site 86
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Sample ID	Sample Depth (ft bgs)	Date
Surface Soil		
IR86-SS100-09D	0–0.5	10/7/2009
IR86-SS101-0-0_5-09D	0–0.5	10/9/2009
IR86-SS104-0-0_5-09D	0–0.5	10/9/2009
IR86-SS105-0-0_5-09D	0–0.5	10/10/2009
IR86-SS106-0-0_5-09D	0–0.5	10/10/2009
IR86-SS107-0-0_5-09D	0–0.5	10/10/2009
IR86-SS108-0-0_5-09D	0–0.5	10/11/2009
IR86-SS109-09D	0–0.5	10/8/2009
IR86-SS110-0-0_5-09D	0–0.5	10/11/2009
IR86-SS111-0-0_5-09D	0–0.5	10/11/2009
IR86-SS112-0-0_5-09D	0–0.5	10/12/2009
IR86-SS113-0-0_5-09D	0–0.5	10/12/2009
IR86-SS114-0-0_5-09D	0–0.5	10/13/2009
IR86-SS114D-0-0_5-09D	0–0.5	10/13/2009
IR86-SS01-07D	0–0.5	12/7/2007
IR86-SS02-07D	0–0.5	12/7/2007
IR86-SS03-07D	0–0.5	12/7/2007
IR86-SS04-07D	0–0.5	12/7/2007
IR86-SS05-07D	0–0.5	12/7/2007
IR86-SS05D-07D	0–0.5	12/7/2007
IR86-SS06-07D	0–0.5	12/7/2007
IR86-SS07-07D	0–0.5	12/7/2007
IR86-SS08-07D	0–0.5	12/7/2007
IR86-SS09-07D	0–0.5	12/7/2007
IR86-SS10-07D	0–0.5	12/7/2007
Subsurface Soil		
IR86-SB111-01-02-09D	1–2	10/12/2009
IR86-SB113-02-03-09D	2–3	10/12/2009
Surface Water (Western Pond)		
IR86-SW01-07D	NA	12/7/2007
IR86-SW01-08B	NA	6/11/2008
IR86-SW02-07D	NA	12/7/2007
IR86-SW02-08B	NA	6/11/2008
IR86-SW02D-08B	NA	6/11/2008
IR86-SW03-07D	NA	12/7/2007
Surface Water (Drainage Ditch)		
IR86-SW105-09D	NA	11/8/2009
IR86-SW105D-09D	NA	11/8/2009
IR86-SW106-09D	NA	11/8/2009
IR86-SW108-09D	NA	11/8/2009
IR86-SW110-09D	NA	11/8/2009
IR86-SW112-09D	NA	11/8/2009
IR86-SW113-09D	NA	11/8/2009
Groundwater		
IR86-GW03-09D	NA	12/14/2009
IR86-GW09-09D	NA	12/11/2009
IR86-GW10IW-09D	NA	12/14/2009
IR86-GW15DW-10A	NA	1/14/2010

TABLE I-2
Sample Locations Used in the Ecological Risk Assessment (ERA) for Site 86
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Sample ID	Sample Depth (ft bgs)	Date
Groundwater (continued)		
IR86-GW15IW-09D	NA	12/14/2009
IR86-GW16DW-09D	NA	12/15/2009
IR86-GW16IW-09D	NA	12/15/2009
IR86-GW17DW-09D	NA	12/11/2009
IR86-GW17IW-09D	NA	12/11/2009
IR86-GW18DW-09D	NA	12/15/2009
IR86-GW18DWD-09D	NA	12/15/2009
IR86-GW19DW-09D	NA	12/14/2009
IR86-GW22IW-09D	NA	12/13/2009
IR86-GW27IW-09D	NA	12/10/2009
IR86-GW29IW-09D	NA	12/15/2009
IR86-GW30IW-09D	NA	12/11/2009
IR86-GW31DW-09D	NA	12/18/2009
IR86-GW31IW-09D	NA	12/16/2009
IR86-GW34IW-09D	NA	12/17/2009
IR86-GW38IWA-09D	NA	12/10/2009
IR86-GW38IWB-09D	NA	12/10/2009
IR86-GW38IWC-09D	NA	12/10/2009
IR86-GW39-10A	NA	1/13/2010
IR86-GW40-09D	NA	12/15/2009
IR86-GW40D-09D	NA	12/15/2009
IR86-GW41-09D	NA	12/7/2009
IR86-GW42DW-09D	NA	12/13/2009
IR86-GW42IW-09D	NA	12/12/2009
IR86-GW43IW-09D	NA	12/13/2009
IR86-GW44DW-09D	NA	12/13/2009
IR86-GW44IW-09D	NA	12/12/2009
IR86-GW45DW-10A	NA	1/15/2010
IR86-GW46IW-09D	NA	12/7/2009
IR86-GW47-09D	NA	12/9/2009
IR86-GW47IW-09D	NA	12/9/2009
IR86-GW48-09D	NA	12/13/2009
IR86-GW48IW-09D	NA	12/16/2009
IR86-GW49DW-09D	NA	12/17/2009
IR86-GW51DW-10A	NA	1/15/2010
IR86-GW51DWD-10A	NA	1/15/2010
IR86-GW52-09D	NA	12/9/2009
IR86-GW53-09D	NA	12/8/2009
IR86-GW54IW-09D	NA	12/14/2009
IR86-GW55IW-09D	NA	12/13/2009
IR86-GW55IWD-09D	NA	12/13/2009
IR86-GW56-09D	NA	12/16/2009
IR86-GW56-10A	NA	3/16/2010
IR86-GW56DW-10A	NA	1/14/2010
IR86-GW58-09D	NA	12/16/2009
IR86-GW58-10A	NA	3/16/2010
IR86-GW58D-10A	NA	3/16/2010
IR86-GW58DW-10A	NA	1/13/2010

TABLE I-2
Sample Locations Used in the Ecological Risk Assessment (ERA) for Site 86
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Sample ID	Sample Depth (ft bgs)	Date
Groundwater (continued)		
IR86-GW58IW-09D	NA	12/16/2009
IR86-GW58IW-10A	NA	3/16/2010
IR86-GW59-09D	NA	12/12/2009
IR86-GW59D-09D	NA	12/12/2009
IR86-GW59DW-09D	NA	12/18/2009
IR86-GW59IW-09D	NA	12/12/2009
IR86-GW60-09D	NA	12/18/2009
IR86-GW60IW-09D	NA	12/17/2009
IR86-GW61-09D	NA	12/12/2009
IR86-GW61DW-09D	NA	12/18/2009
IR86-GW61IW-09D	NA	12/12/2009
IR86-GW62-09D	NA	12/14/2009
IR86-GW62D-09D	NA	12/14/2009
IR86-GW63-10A	NA	1/13/2010
IR86-GW63IW-09D	NA	12/17/2009
IR86-GW64-09D	NA	12/16/2009
SWMU318-GW01-09D	NA	12/10/2009
SWMU318-GW01D-09D	NA	12/10/2009
SWMU318-GW05-09D	NA	12/15/2009
SWMU318-GW08-09D	NA	12/8/2009
USTAS410S-GW02-09D	NA	12/9/2009
Sediment (Western Pond)		
IR86-SD01-08B	0–0.5	6/11/2008
IR86-SD02-08B	0–0.5	6/11/2008
IR86-SD02D-08B	0–0.5	6/11/2008
Sediment (Drainage Ditch)		
IR86-SD105-0-0_5-09D	0–0.5	11/8/2009
IR86-SD105-10A	0–0.5	3/16/2010
IR86-SD106-0-0_5-09D	0–0.5	11/8/2009
IR86-SD106-10A	0–0.5	3/16/2010
IR86-SD107-0-0_5-09D	0–0.5	11/10/2009
IR86-SD107D-0-0_5-09D	0–0.5	11/10/2009
IR86-SD108-0-0_5-09D	0–0.5	11/8/2009
IR86-SD108-10A	0–0.5	3/16/2010
IR86-SD109-0-0_5-09D	0–0.5	11/8/2009
IR86-SD109-10A	0–0.5	3/16/2010
IR86-SD110-0-0_5-09D	0–0.5	11/8/2009
IR86-SD110-10A	0–0.5	3/16/2010
IR86-SD112-0-0_5-09D	0–0.5	11/8/2009
IR86-SD112-10A	0–0.5	3/16/2010
IR86-SD112D-10A	0–0.5	3/16/2010
IR86-SD113-0-0_5-09D	0–0.5	11/8/2009
IR86-SD113-10A	0–0.5	3/16/2010

Notes:

NA - Not applicable

Generated By: S.Kent/ATL
Checked By: J.Weier/ATL

TABLE I-3
Site 86 Surface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Volatile Organic Compounds (µg/kg)											
1,1,1-Trichloroethane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
1,1-Dichloroethane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
1,1-Dichloroethene	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
1,2,4-Trichlorobenzene	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
1,2-Dibromo-3-chloropropane	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dibromoethane	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
1,2-Dichloroethane	4.90 - 21.0	0 / 23	--	--	400	-- / --	0.053	--	--	NO	HQ less than one, not detected
1,2-Dichloropropane	4.90 - 21.0	0 / 23	--	--	700,000	-- / --	3.00E-05	--	--	NO	HQ less than one, not detected
1,3-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
1,4-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
2-Butanone	9.90 - 21.0	2 / 23	20.0	IR86-SS111-0-0_5-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
2-Hexanone	9.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	9.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Acetone	12.0 - 37.0	6 / 23	230	IR86-SS113-0-0_5-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzene	4.90 - 21.0	0 / 23	--	--	50.0	-- / --	0.42	--	--	NO	HQ less than one, not detected
Bromodichloromethane	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Bromoform	9.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Bromomethane	9.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbon disulfide	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbon tetrachloride	4.90 - 21.0	0 / 23	--	--	1,000,000	-- / --	2.10E-05	--	--	NO	HQ less than one, not detected
Chlorobenzene	4.90 - 21.0	0 / 23	--	--	50.0	-- / --	0.42	--	--	NO	HQ less than one, not detected
Chloroethane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
Chloroform	4.90 - 21.0	0 / 23	--	--	1.00	-- / --	21.0	--	--	YES	(2) Not detected, HQ above one
Chloromethane	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
cis-1,2-Dichloroethene	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
cis-1,3-Dichloropropene	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Cyclohexane	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
Dibromochloromethane	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Ethylbenzene	4.90 - 21.0	0 / 23	--	--	50.0	-- / --	0.42	--	--	NO	HQ less than one, not detected
Isopropylbenzene	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methyl acetate	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methylcyclohexane	4.90 - 21.0	1 / 23	7.40	IR86-SS107-0-0_5-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Methylene chloride	4.90 - 21.0	1 / 23	12.0	IR86-SS114-0-0_5-09D	2,000	0 / 23	0.0060	--	--	NO	HQ less than one, detected
Methyl-tert-butyl ether (MTBE)	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Styrene	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
Tetrachloroethene	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
Toluene	4.90 - 21.0	2 / 23	53.0	IR86-SS107-0-0_5-09D	50.0	1 / 23	1.06	--	--	YES	(1) HQ above one, detected
trans-1,2-Dichloroethene	4.90 - 21.0	0 / 23	--	--	100	-- / --	0.21	--	--	NO	HQ less than one, not detected
trans-1,3-Dichloropropene	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Trichloroethene	4.90 - 21.0	0 / 23	--	--	1.00	-- / --	21.0	--	--	YES	(2) Not detected, HQ above one
Trichlorofluoromethane (Freon-11)	4.90 - 21.0	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Vinyl chloride	4.90 - 21.0	0 / 23	--	--	10.0	-- / --	2.10	--	--	YES	(2) Not detected, HQ above one
Xylene, total	4.90 - 21.0	0 / 23	--	--	50.0	-- / --	0.42	--	--	NO	HQ less than one, not detected

TABLE I-3
Site 86 Surface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Semivolatile Organic Compounds (µg/kg)											
1,1-Biphenyl	270 - 400	0 / 20	--	--	60,000	-- / --	0.0067	--	--	NO	HQ less than one, not detected
2,2'-Oxybis(1-chloropropane)	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	270 - 1,000	0 / 23	--	--	4,000	-- / --	0.25	--	--	NO	HQ less than one, not detected
2,4,6-Trichlorophenol	270 - 400	0 / 23	--	--	10,000	-- / --	0.040	--	--	NO	HQ less than one, not detected
2,4-Dichlorophenol	270 - 400	0 / 23	--	--	3.00	-- / --	133	--	--	YES	(2) Not detected, HQ above one
2,4-Dimethylphenol	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4-Dinitrophenol	370 - 1,000	0 / 22	--	--	20,000	-- / --	0.050	--	--	NO	HQ less than one, not detected
2,4-Dinitrotoluene	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Chloronaphthalene	270 - 400	0 / 23	--	--	1,000	-- / --	0.40	--	--	NO	HQ less than one, not detected
2-Chlorophenol	270 - 400	0 / 23	--	--	10.0	-- / --	40.0	--	--	YES	(2) Not detected, HQ above one
2-Methylnaphthalene	270 - 400	0 / 23	--	--	29,000	-- / --	0.014	--	--	NO	HQ less than one, not detected
2-Methylphenol	270 - 400	0 / 23	--	--	500	-- / --	0.80	--	--	NO	HQ less than one, not detected
2-Nitroaniline	270 - 1,000	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Nitrophenol	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3-Nitroaniline	270 - 1,000	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	430 - 1,000	0 / 22	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Bromophenyl-phenylether	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloro-3-methylphenol	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloroaniline	270 - 400	0 / 23	--	--	20,000	-- / --	0.020	--	--	NO	HQ less than one, not detected
4-Chlorophenyl-phenylether	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Methylphenol	73.0 - 400	0 / 23	--	--	500	-- / --	0.80	--	--	NO	HQ less than one, not detected
4-Nitroaniline	270 - 1,000	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Nitrophenol	330 - 1,000	0 / 23	--	--	7,000	-- / --	0.14	--	--	NO	HQ less than one, not detected
Acenaphthene	3.60 - 400	1 / 23	79.0	IR86-SS104-0-0_5-09D	29,000	0 / 23	0.0027	--	--	NO	HQ less than one, detected
Acenaphthylene	3.60 - 400	1 / 23	2.20	IR86-SS104-0-0_5-09D	29,000	0 / 23	7.59E-05	--	--	NO	HQ less than one, detected
Acetophenone	270 - 400	1 / 20	87.0	IR86-SS02-07D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Anthracene	3.60 - 400	8 / 23	140	IR86-SS104-0-0_5-09D	29,000	0 / 23	0.0048	--	--	NO	HQ less than one, detected
Atrazine	270 - 400	0 / 23	--	--	0.050	-- / --	8,000	--	--	YES	(2) Not detected, HQ above one
Benzaldehyde	270 - 400	1 / 23	30.0	IR86-SS113-0-0_5-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzo(a)anthracene	3.70 - 390	14 / 23	260	IR86-SS104-0-0_5-09D	1,100	0 / 23	0.24	--	--	NO	HQ less than one, detected
Benzo(a)pyrene	3.70 - 390	14 / 23	290	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.26	--	--	NO	HQ less than one, detected
Benzo(b)fluoranthene	3.70 - 390	15 / 23	360	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.33	--	--	NO	HQ less than one, detected
Benzo(g,h,i)perylene	3.70 - 400	11 / 23	230	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.21	--	--	NO	HQ less than one, detected
Benzo(k)fluoranthene	3.70 - 390	14 / 23	280	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.25	--	--	NO	HQ less than one, detected
bis(2-Chloroethoxy)methane	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	36.0 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Ethylhexyl)phthalate	270 - 390	5 / 23	290	IR86-SS04-07D	100	4 / 23	2.90	--	--	YES	(1) HQ above one, detected
Butylbenzylphthalate	270 - 400	4 / 23	240	IR86-SS04-07D	100	2 / 23	2.40	--	--	YES	(1) HQ above one, detected
Caprolactam	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbazole	270 - 400	2 / 23	46.0	IR86-SS114-0-0_5-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Chrysene	3.70 - 390	13 / 23	290	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.26	--	--	NO	HQ less than one, detected
Dibenz(a,h)anthracene	3.60 - 400	1 / 23	8.30	IR86-SS108-0-0_5-09D	1,100	0 / 23	0.0075	--	--	NO	HQ less than one, detected
Dibenzofuran	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Diethylphthalate	270 - 400	0 / 23	--	--	100,000	-- / --	0.0040	--	--	NO	HQ less than one, not detected
Dimethyl phthalate	270 - 400	0 / 23	--	--	200,000	-- / --	0.0020	--	--	NO	HQ less than one, not detected

TABLE I-3
Site 86 Surface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Di-n-butylphthalate	270 - 400	3 / 23	240	IR86-SS06-07D	200,000	0 / 23	0.0012	--	--	NO	HQ less than one, detected
Di-n-octylphthalate	270 - 400	0 / 23	--	--	100	-- / --	4.00	--	--	YES	(2) Not detected, HQ above one
Fluoranthene	3.70 - 380	15 / 23	540	IR86-SS104-0-0_5-09D	1,100	0 / 23	0.49	--	--	NO	HQ less than one, detected
Fluorene	3.60 - 400	1 / 23	60.0	IR86-SS104-0-0_5-09D	29,000	0 / 23	0.0021	--	--	NO	HQ less than one, detected
Hexachlorobenzene	270 - 400	0 / 23	--	--	2.50	-- / --	160	--	--	YES	(2) Not detected, HQ above one
Hexachlorobutadiene	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Hexachlorocyclopentadiene	280 - 400	0 / 22	--	--	10,000	-- / --	0.040	--	--	NO	HQ less than one, not detected
Hexachloroethane	270 - 400	0 / 23	--	--	100	-- / --	4.00	--	--	YES	(2) Not detected, HQ above one
Indeno(1,2,3-cd)pyrene	3.70 - 390	13 / 23	220	IR86-SS114-0-0_5-09D	1,100	0 / 23	0.20	--	--	NO	HQ less than one, detected
Isophorone	200 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Naphthalene	3.60 - 400	2 / 23	12.0	IR86-SS104-0-0_5-09D	29,000	0 / 23	4.14E-04	--	--	NO	HQ less than one, detected
n-Nitroso-di-n-propylamine	270 - 400	0 / 23	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	270 - 400	0 / 23	--	--	20,000	-- / --	0.020	--	--	NO	HQ less than one, not detected
Nitrobenzene	270 - 400	0 / 23	--	--	40,000	-- / --	0.010	--	--	NO	HQ less than one, not detected
Pentachlorophenol	470 - 1,000	0 / 22	--	--	2,100	-- / --	0.48	--	--	NO	HQ less than one, not detected
Phenanthrene	3.70 - 390	13 / 23	360	IR86-SS104-0-0_5-09D	29,000	0 / 23	0.012	--	--	NO	HQ less than one, detected
Phenol	270 - 400	0 / 23	--	--	50.0	-- / --	8.00	--	--	YES	(2) Not detected, HQ above one
Pyrene	360 - 390	15 / 23	430	IR86-SS104-0-0_5-09D	1,100	0 / 23	0.39	--	--	NO	HQ less than one, detected
Pesticide/Polychlorinated Biphenyls (µg/kg)											
4,4'-DDD	3.60 - 4.40	9 / 23	14.0	IR86-SS105-0-0_5-09D	21.0	0 / 23	0.67	--	--	NO	HQ less than one, detected
4,4'-DDE	3.60 - 4.40	18 / 23	18.0	IR86-SS06-07D	21.0	0 / 23	0.86	--	--	NO	HQ less than one, detected
4,4'-DDT	3.60 - 4.60	11 / 23	15.0	IR86-SS113-0-0_5-09D	21.0	0 / 23	0.71	--	--	NO	HQ less than one, detected
Aldrin	1.80 - 2.50	0 / 23	--	--	2.50	-- / --	1.00	--	--	YES	(2) Not detected, HQ above one
alpha-BHC	1.80 - 2.50	0 / 23	--	--	2.50	-- / --	1.00	--	--	YES	(2) Not detected, HQ above one
alpha-Chlordane	1.80 - 2.50	8 / 23	30.0	IR86-SS105-0-0_5-09D	100	0 / 23	0.30	--	--	NO	HQ less than one, detected
Aroclor-1016	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
Aroclor-1221	73.0 - 98.0	0 / 23	--	--	20.0	-- / --	4.90	--	--	YES	(2) Not detected, HQ above one
Aroclor-1232	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
Aroclor-1242	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
Aroclor-1248	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
Aroclor-1254	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
Aroclor-1260	36.0 - 48.0	0 / 23	--	--	20.0	-- / --	2.40	--	--	YES	(2) Not detected, HQ above one
beta-BHC	1.80 - 2.50	1 / 23	28.0	IR86-SS105-0-0_5-09D	1.00	1 / 23	28.0	--	--	YES	(1) HQ above one, detected
delta-BHC	1.80 - 2.50	2 / 23	1.10	IR86-SS02-07D	100	0 / 23	0.011	--	--	NO	HQ less than one, detected
Dieldrin	3.60 - 4.80	5 / 23	5.70	IR86-SS104-0-0_5-09D	4.90	1 / 23	1.16	--	--	YES	(1) HQ above one, detected
Endosulfan I	1.80 - 2.50	1 / 23	34.0	IR86-SS105-0-0_5-09D	100	0 / 23	0.34	--	--	NO	HQ less than one, detected
Endosulfan II	3.60 - 4.80	7 / 23	8.80	IR86-SS110-0-0_5-09D	100	0 / 23	0.088	--	--	NO	HQ less than one, detected
Endosulfan sulfate	3.60 - 4.80	1 / 23	2.70	IR86-SS105-0-0_5-09D	100	0 / 23	0.027	--	--	NO	HQ less than one, detected
Endrin	3.60 - 4.80	1 / 23	1.20	IR86-SS01-07D	1.00	1 / 23	1.20	--	--	YES	(1) HQ above one, detected
Endrin aldehyde	3.60 - 4.80	0 / 23	--	--	100	-- / --	0.048	--	--	NO	HQ less than one, not detected
Endrin ketone	3.60 - 4.80	1 / 23	3.50	IR86-SS114-0-0_5-09D	100	0 / 23	0.035	--	--	NO	HQ less than one, detected
gamma-BHC (Lindane)	1.80 - 2.50	1 / 23	0.79	IR86-SS04-07D	0.050	1 / 23	15.8	--	--	YES	(1) HQ above one, detected
gamma-Chlordane	1.80 - 2.20	13 / 23	30.0	IR86-SS105-0-0_5-09D	100	0 / 23	0.30	--	--	NO	HQ less than one, detected
Heptachlor	1.80 - 2.50	0 / 23	--	--	100	-- / --	0.025	--	--	NO	HQ less than one, not detected
Heptachlor epoxide	1.80 - 2.30	2 / 23	8.40	IR86-SS113-0-0_5-09D	100	0 / 23	0.084	--	--	NO	HQ less than one, detected
Methoxychlor	18.0 - 25.0	3 / 23	51.0	IR86-SS110-0-0_5-09D	100	0 / 23	0.51	--	--	NO	HQ less than one, detected
Toxaphene	33.0 - 200	0 / 23	--	--	100	-- / --	2.00	--	--	YES	(2) Not detected, HQ above one

TABLE I-3
Site 86 Surface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Inorganics (mg/kg)											
Aluminum	-- - --	23 / 23	15,000	IR86-SS112-0-0_5-09D	50.0	23 / 23	300	5,487	Yes	YES	(1) HQ above one, detected
Antimony	0.55 - 7.30	3 / 23	0.30	IR86-SS106-0-0_5-09D	0.27	1 / 23	1.11	0.447	No	NO	Consistent with background
Arsenic	0.74 - 1.10	20 / 23	3.20	IR86-SS100-09D	18.0	0 / 23	0.18	0.626	Yes	NO	HQ less than one, detected
Barium	-- - --	23 / 23	91.0	IR86-SS114-0-0_5-09D	330	0 / 23	0.28	14.5	Yes	NO	HQ less than one, detected
Beryllium	0.23 - 0.60	6 / 23	0.19	IR86-SS100-09D	21.0	0 / 23	0.0090	0.103	Yes	NO	HQ less than one, detected
Cadmium	0.55 - 0.56	21 / 23	1.80	IR86-SS114-0-0_5-09D	0.36	10 / 23	5.00	0.033	Yes	YES	(1) HQ above one, detected
Calcium [3]	-- - --	23 / 23	37,000	IR86-SS109-09D	NSV	-- / --	NSV	6,360	Yes	NO	Macronutrient
Chromium	-- - --	23 / 23	23.0	IR86-SS100-09D	26.0	0 / 23	0.88	6.05	Yes	NO	HQ less than one, detected
Cobalt	5.30 - 6.00	13 / 23	2.50	IR86-SS100-09D	13.0	0 / 23	0.19	0.294	Yes	NO	HQ less than one, detected
Copper	-- - --	23 / 23	11.0	IR86-SS114-0-0_5-09D	28.0	0 / 23	0.39	4.83	Yes	NO	HQ less than one, detected
Cyanide	2.70 - 2.80	8 / 10	0.50	IR86-SS10-07D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Iron	-- - --	23 / 23	4,500	IR86-SS105-0-0_5-09D	200	23 / 23	22.5	3,245	Yes	YES	(1) HQ above one, detected
Lead	-- - --	23 / 23	99.9	IR86-SS07-07D	11.0	15 / 23	9.08	12.3	Yes	YES	(1) HQ above one, detected
Magnesium [3]	-- - --	23 / 23	1,280	IR86-SS06-07D	NSV	-- / --	NSV	238	Yes	NO	Macronutrient
Manganese	-- - --	23 / 23	43.0	IR86-SS107-0-0_5-09D	220	0 / 23	0.20	13.7	Yes	NO	HQ less than one, detected
Mercury	0.091 - 0.12	9 / 23	0.076	IR86-SS07-07D	0.10	0 / 23	0.76	0.081	No	NO	HQ less than one, detected
Nickel	-- - --	23 / 23	7.30	IR86-SS100-09D	38.0	0 / 23	0.19	1.21	Yes	NO	HQ less than one, detected
Potassium [3]	370 - 370	22 / 23	900	IR86-SS107-0-0_5-09D	NSV	-- / --	NSV	116	Yes	NO	Macronutrient
Selenium	0.60 - 4.20	10 / 23	1.10	IR86-SS100-09D	0.52	2 / 23	2.12	0.563	Yes	YES	(1) HQ above one, detected
Silver	0.28 - 1.20	1 / 23	0.27	IR86-SS109-09D	4.20	0 / 23	0.064	0.14	Yes	NO	HQ less than one, detected
Sodium [3]	545 - 604	13 / 23	340	IR86-SS107-0-0_5-09D	NSV	-- / --	NSV	80.9	Yes	NO	Macronutrient
Thallium	2.70 - 3.70	5 / 23	0.53	IR86-SS100-09D	1.00	0 / 23	0.53	0.36	Yes	NO	HQ less than one, detected
Vanadium	-- - --	23 / 23	22.5	IR86-SS07-07D	7.80	20 / 23	2.88	8.9	Yes	YES	(1) HQ above one, detected
Zinc	-- - --	23 / 23	92.0	IR86-SS114-0-0_5-09D	46.0	2 / 23	2.00	10.8	Yes	YES	(1) HQ above one, detected

Notes:
The categorized analytes were retained for quantitative refinement in the Step 3 table.
[1] - Count of detected samples exceeding or equaling Screening Value
[2] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows
Category 1 – Contaminants with a maximum detection exceeding the ESV
Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV
Category 3 – Detected contaminants with no ESV
Category 4 – Undetected contaminants with no ESV
[3] - Macronutrient - Not considered to be a COPC
µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No Screening Value
Generated By: S.Kent/ATL
Checked By: J.Weier/ATL

TABLE I-4
Site 86 Subsurface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Volatile Organic Compounds (µg/kg)											
1,1,1-Trichloroethane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
1,1-Dichloroethane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
1,1-Dichloroethene	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
1,2,4-Trichlorobenzene	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
1,2-Dibromo-3-chloropropane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dibromoethane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
1,2-Dichloroethane	4.60 - 7.00	0 / 2	--	--	400	-- / --	0.018	--	--	NO	HQ less than one, not detected
1,2-Dichloropropane	4.60 - 7.00	0 / 2	--	--	700,000	-- / --	1.00E-05	--	--	NO	HQ less than one, not detected
1,3-Dichlorobenzene	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
1,4-Dichlorobenzene	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
2-Butanone	9.20 - 14.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Hexanone	9.20 - 14.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	9.20 - 14.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Acetone	18.0 - 28.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Benzene	4.60 - 7.00	0 / 2	--	--	50.0	-- / --	0.14	--	--	NO	HQ less than one, not detected
Bromodichloromethane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Bromoform	9.20 - 14.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Bromomethane	9.20 - 14.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbon disulfide	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbon tetrachloride	4.60 - 7.00	0 / 2	--	--	1,000,000	-- / --	7.00E-06	--	--	NO	HQ less than one, not detected
Chlorobenzene	4.60 - 7.00	0 / 2	--	--	50.0	-- / --	0.14	--	--	NO	HQ less than one, not detected
Chloroethane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
Chloroform	4.60 - 7.00	0 / 2	--	--	1.00	-- / --	7.00	--	--	YES	(2) Not detected, HQ above one
Chloromethane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
cis-1,2-Dichloroethene	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
cis-1,3-Dichloropropene	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Cyclohexane	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
Dibromochloromethane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Ethylbenzene	4.60 - 7.00	0 / 2	--	--	50.0	-- / --	0.14	--	--	NO	HQ less than one, not detected
Isopropylbenzene	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methyl acetate	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methylcyclohexane	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methylene chloride	4.60 - 7.00	0 / 2	--	--	2,000	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Methyl-tert-butyl ether (MTBE)	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Styrene	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
Tetrachloroethene	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
Toluene	4.60 - 7.00	0 / 2	--	--	50.0	-- / --	0.14	--	--	NO	HQ less than one, not detected
trans-1,2-Dichloroethene	4.60 - 7.00	0 / 2	--	--	100	-- / --	0.070	--	--	NO	HQ less than one, not detected
trans-1,3-Dichloropropene	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Trichloroethene	4.60 - 7.00	0 / 2	--	--	1.00	-- / --	7.00	--	--	YES	(2) Not detected, HQ above one

TABLE I-4
Site 86 Subsurface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Trichlorofluoromethane (Freon-11)	4.60 - 7.00	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Vinyl chloride	4.60 - 7.00	0 / 2	--	--	10.0	-- / --	0.70	--	--	NO	HQ less than one, not detected
Xylene, total	4.60 - 7.00	0 / 2	--	--	50.0	-- / --	0.14	--	--	NO	HQ less than one, not detected
Semivolatile Organic Compounds (µg/kg)											
1,1-Biphenyl	290 - 290	0 / 2	--	--	60,000	-- / --	0.0048	--	--	NO	HQ less than one, not detected
2,2'-Oxybis(1-chloropropane)	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	290 - 290	0 / 2	--	--	4,000	-- / --	0.073	--	--	NO	HQ less than one, not detected
2,4,6-Trichlorophenol	290 - 290	0 / 2	--	--	10,000	-- / --	0.029	--	--	NO	HQ less than one, not detected
2,4-Dichlorophenol	290 - 290	0 / 2	--	--	3.00	-- / --	96.7	--	--	YES	(2) Not detected, HQ above one
2,4-Dimethylphenol	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4-Dinitrophenol	390 - 390	0 / 2	--	--	20,000	-- / --	0.020	--	--	NO	HQ less than one, not detected
2,4-Dinitrotoluene	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Chloronaphthalene	290 - 290	0 / 2	--	--	1,000	-- / --	0.29	--	--	NO	HQ less than one, not detected
2-Chlorophenol	290 - 290	0 / 2	--	--	10.0	-- / --	29.0	--	--	YES	(2) Not detected, HQ above one
2-Methylnaphthalene	290 - 290	0 / 2	--	--	29,000	-- / --	0.010	--	--	NO	HQ less than one, not detected
2-Methylphenol	290 - 290	0 / 2	--	--	500	-- / --	0.58	--	--	NO	HQ less than one, not detected
2-Nitroaniline	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Nitrophenol	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3-Nitroaniline	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	460 - 460	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Bromophenyl-phenylether	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloro-3-methylphenol	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloroaniline	290 - 290	0 / 2	--	--	20,000	-- / --	0.015	--	--	NO	HQ less than one, not detected
4-Chlorophenyl-phenylether	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Methylphenol	79.0 - 79.0	0 / 2	--	--	500	-- / --	0.16	--	--	NO	HQ less than one, not detected
4-Nitroaniline	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Nitrophenol	350 - 350	0 / 2	--	--	7,000	-- / --	0.050	--	--	NO	HQ less than one, not detected
Acenaphthene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
Acenaphthylene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
Acetophenone	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Anthracene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
Atrazine	290 - 290	0 / 2	--	--	0.050	-- / --	5,800	--	--	YES	(2) Not detected, HQ above one
Benzaldehyde	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Benzo(a)anthracene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Benzo(a)pyrene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Benzo(b)fluoranthene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Benzo(g,h,i)perylene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Benzo(k)fluoranthene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
bis(2-Chloroethoxy)methane	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	39.0 - 39.0	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Ethylhexyl)phthalate	290 - 290	0 / 2	--	--	100	-- / --	2.90	--	--	YES	(2) Not detected, HQ above one
Butylbenzylphthalate	290 - 290	0 / 2	--	--	100	-- / --	2.90	--	--	YES	(2) Not detected, HQ above one
Caprolactam	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbazole	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value

TABLE I-4
Site 86 Subsurface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
Chrysene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Dibenz(a,h)anthracene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Dibenzofuran	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Diethylphthalate	290 - 290	0 / 2	--	--	100,000	-- / --	0.0029	--	--	NO	HQ less than one, not detected
Dimethyl phthalate	290 - 290	0 / 2	--	--	200,000	-- / --	0.0015	--	--	NO	HQ less than one, not detected
Di-n-butylphthalate	290 - 290	0 / 2	--	--	200,000	-- / --	0.0015	--	--	NO	HQ less than one, not detected
Di-n-octylphthalate	290 - 290	0 / 2	--	--	100	-- / --	2.90	--	--	YES	(2) Not detected, HQ above one
Fluoranthene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Fluorene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
Hexachlorobenzene	290 - 290	0 / 2	--	--	2.50	-- / --	116	--	--	YES	(2) Not detected, HQ above one
Hexachlorobutadiene	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Hexachlorocyclopentadiene	290 - 290	0 / 2	--	--	10,000	-- / --	0.029	--	--	NO	HQ less than one, not detected
Hexachloroethane	290 - 290	0 / 2	--	--	100	-- / --	2.90	--	--	YES	(2) Not detected, HQ above one
Indeno(1,2,3-cd)pyrene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Isophorone	210 - 210	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Naphthalene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
n-Nitroso-di-n-propylamine	290 - 290	0 / 2	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	290 - 290	0 / 2	--	--	20,000	-- / --	0.015	--	--	NO	HQ less than one, not detected
Nitrobenzene	290 - 290	0 / 2	--	--	40,000	-- / --	0.0073	--	--	NO	HQ less than one, not detected
Pentachlorophenol	490 - 490	0 / 2	--	--	2,100	-- / --	0.23	--	--	NO	HQ less than one, not detected
Phenanthrene	3.90 - 3.90	0 / 2	--	--	29,000	-- / --	1.34E-04	--	--	NO	HQ less than one, not detected
Phenol	290 - 290	0 / 2	--	--	50.0	-- / --	5.80	--	--	YES	(2) Not detected, HQ above one
Pyrene	3.90 - 3.90	0 / 2	--	--	1,100	-- / --	0.0035	--	--	NO	HQ less than one, not detected
Pesticide/Polychlorinated Biphenyls (µg/kg)											
4,4'-DDD	3.80 - 3.90	0 / 2	--	--	21.0	-- / --	0.19	--	--	NO	HQ less than one, not detected
4,4'-DDE	3.80 - 3.90	0 / 2	--	--	21.0	-- / --	0.19	--	--	NO	HQ less than one, not detected
4,4'-DDT	3.80 - 3.90	0 / 2	--	--	21.0	-- / --	0.19	--	--	NO	HQ less than one, not detected
Aldrin	2.00 - 2.00	0 / 2	--	--	2.50	-- / --	0.80	--	--	NO	HQ less than one, not detected
alpha-BHC	2.00 - 2.00	0 / 2	--	--	2.50	-- / --	0.80	--	--	NO	HQ less than one, not detected
alpha-Chlordane	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Aroclor-1016	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1221	77.0 - 79.0	0 / 2	--	--	20.0	-- / --	3.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1232	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1242	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1248	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1254	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
Aroclor-1260	38.0 - 39.0	0 / 2	--	--	20.0	-- / --	1.95	--	--	YES	(2) Not detected, HQ above one
beta-BHC	2.00 - 2.00	0 / 2	--	--	1.00	-- / --	2.00	--	--	YES	(2) Not detected, HQ above one
delta-BHC	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Dieldrin	3.80 - 3.90	0 / 2	--	--	4.90	-- / --	0.80	--	--	NO	HQ less than one, not detected
Endosulfan I	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Endosulfan II	3.80 - 3.90	0 / 2	--	--	100	-- / --	0.039	--	--	NO	HQ less than one, not detected
Endosulfan sulfate	3.80 - 3.90	0 / 2	--	--	100	-- / --	0.039	--	--	NO	HQ less than one, not detected
Endrin	3.80 - 3.90	0 / 2	--	--	1.00	-- / --	3.90	--	--	YES	(2) Not detected, HQ above one
Endrin aldehyde	3.80 - 3.90	0 / 2	--	--	100	-- / --	0.039	--	--	NO	HQ less than one, not detected
Endrin ketone	3.80 - 3.90	0 / 2	--	--	100	-- / --	0.039	--	--	NO	HQ less than one, not detected

TABLE I-4
Site 86 Subsurface Soil Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[2]
gamma-BHC (Lindane)	2.00 - 2.00	0 / 2	--	--	0.050	-- / --	40.0	--	--	YES	(2) Not detected, HQ above one
gamma-Chlordane	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Heptachlor	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Heptachlor epoxide	2.00 - 2.00	0 / 2	--	--	100	-- / --	0.020	--	--	NO	HQ less than one, not detected
Methoxychlor	20.0 - 20.0	0 / 2	--	--	100	-- / --	0.20	--	--	NO	HQ less than one, not detected
Toxaphene	35.0 - 35.0	0 / 2	--	--	100	-- / --	0.35	--	--	NO	HQ less than one, not detected
Inorganics (mg/kg)											
Aluminum	-- - --	2 / 2	14,000	IR86-SB113-02-03-09D	50.0	2 / 2	280	10,369	Yes	YES	(1) HQ above one, detected
Antimony	0.60 - 0.60	1 / 2	0.25	IR86-SB111-01-02-09D	0.27	0 / 2	0.93	0.36	No	NO	HQ less than one, detected
Arsenic	0.59 - 0.59	1 / 2	0.61	IR86-SB113-02-03-09D	18.0	0 / 2	0.034	2.12	No	NO	HQ less than one, detected
Barium	-- - --	2 / 2	15.0	IR86-SB111-01-02-09D	330	0 / 2	0.045	17	No	NO	HQ less than one, detected
Beryllium	0.24 - 0.24	0 / 2	--	--	21.0	-- / --	0.011	0.17	--	NO	HQ less than one, not detected
Cadmium	-- - --	2 / 2	0.035	IR86-SB111-01-02-09D	0.36	0 / 2	0.097	0.02	Yes	NO	HQ less than one, detected
Calcium [3]	-- - --	2 / 2	29.0	IR86-SB113-02-03-09D	NSV	-- / --	NSV	441	No	NO	Consistent with background
Chromium	-- - --	2 / 2	13.0	IR86-SB111-01-02-09D	26.0	0 / 2	0.50	14	No	NO	HQ less than one, detected
Cobalt	-- - --	2 / 2	1.10	IR86-SB113-02-03-09D	13.0	0 / 2	0.085	0.82	Yes	NO	HQ less than one, detected
Copper	0.30 - 0.30	1 / 2	0.62	IR86-SB111-01-02-09D	28.0	0 / 2	0.022	2.56	No	NO	HQ less than one, detected
Iron	-- - --	2 / 2	5,400	IR86-SB113-02-03-09D	200	2 / 2	27.0	5439	No	NO	Consistent with background
Lead	-- - --	2 / 2	6.80	IR86-SB111-01-02-09D	11.0	0 / 2	0.62	8.49	No	NO	HQ less than one, detected
Magnesium [3]	-- - --	2 / 2	480	IR86-SB113-02-03-09D	NSV	-- / --	NSV	363	Yes	NO	Macronutrient
Manganese	-- - --	2 / 2	13.0	IR86-SB111-01-02-09D	220	0 / 2	0.059	9.25	Yes	NO	HQ less than one, detected
Mercury	0.098 - 0.098	1 / 2	0.034	IR86-SB113-02-03-09D	0.10	0 / 2	0.34	0.07	No	NO	HQ less than one, detected
Nickel	-- - --	2 / 2	2.10	IR86-SB111-01-02-09D	38.0	0 / 2	0.055	2.27	No	NO	HQ less than one, detected
Potassium [3]	-- - --	2 / 2	430	IR86-SB111-01-02-09D	NSV	-- / --	NSV	361	Yes	NO	Macronutrient
Selenium	0.59 - 0.60	0 / 2	--	--	0.52	-- / --	1.15	0.50	--	YES	(2) Not detected, HQ above one
Silver	0.29 - 0.30	0 / 2	--	--	4.20	-- / --	0.071	0.13	--	NO	HQ less than one, detected
Sodium [3]	-- - --	2 / 2	41.0	IR86-SB113-02-03-09D	NSV	-- / --	NSV	68	No	NO	Consistent with background
Thallium	2.90 - 3.00	0 / 2	--	--	1.00	-- / --	3.00	0.38	Yes	YES	(2) Not detected, HQ above one
Vanadium	-- - --	2 / 2	20.0	IR86-SB113-02-03-09D	7.80	2 / 2	2.56	17	Yes	YES	(1) HQ above one, detected
Zinc	-- - --	2 / 2	4.30	IR86-SB111-01-02-09D	46.0	0 / 2	0.093	6.59	No	NO	HQ less than one, detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Count of detected samples exceeding or equaling Screening Value
[2] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:
Category 1 – Contaminants with a maximum detection exceeding the ESV
Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV
Category 3 – Detected contaminants with no ESV
Category 4 – Undetected contaminants with no ESV
[3] - Macronutrient - Not considered to be a COPC

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

Generated By: S.Kent/ATL
Checked By: J.Weier/ATL

TABLE I-5
Site 86 Surface Water (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Volatile Organic Compounds (µg/L)									
1,1,1-Trichloroethane	0.50 - 10.0	0 / 5	--	--	528	-- / --	0.019	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	0.50 - 10.0	0 / 5	--	--	240	-- / --	0.042	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	0.50 - 10.0	0 / 5	--	--	940	-- / --	0.011	NO	HQ less than one, not detected
1,1-Dichloroethane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethene	0.50 - 10.0	0 / 5	--	--	303	-- / --	0.033	NO	HQ less than one, not detected
1,2,3-Trichlorobenzene	0.50 - 0.50	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,4-Trichlorobenzene	0.50 - 10.0	0 / 5	--	--	44.9	-- / --	0.22	NO	HQ less than one, not detected
1,2-Dibromo-3-chloropropane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromoethane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	0.50 - 10.0	0 / 5	--	--	15.8	-- / --	0.63	YES	(4) Not detected, no screening value
1,2-Dichloroethane	0.50 - 10.0	0 / 5	--	--	2,000	-- / --	0.0050	NO	HQ less than one, not detected
1,2-Dichloropropane	0.50 - 10.0	0 / 5	--	--	525	-- / --	0.019	NO	HQ less than one, not detected
1,3-Dichlorobenzene	0.50 - 10.0	0 / 5	--	--	50.2	-- / --	0.20	NO	HQ less than one, not detected
1,4-Dichlorobenzene	0.50 - 10.0	0 / 5	--	--	11.2	-- / --	0.89	NO	HQ less than one, not detected
2-Butanone	5.00 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Hexanone	5.00 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	5.00 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetone	6.20 - 18.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzene	0.50 - 10.0	0 / 5	--	--	53.0	-- / --	0.19	NO	HQ less than one, not detected
Bromochloromethane	0.50 - 0.50	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromodichloromethane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromoform	0.50 - 10.0	0 / 5	--	--	293	-- / --	0.034	NO	HQ less than one, not detected
Bromomethane	0.50 - 10.0	0 / 5	--	--	110	-- / --	0.091	NO	HQ less than one, not detected
Carbon disulfide	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon tetrachloride	0.50 - 10.0	0 / 5	--	--	352	-- / --	0.028	NO	HQ less than one, not detected
Chlorobenzene	0.50 - 10.0	0 / 5	--	--	195	-- / --	0.051	NO	HQ less than one, not detected
Chloroethane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroform	0.50 - 10.0	0 / 5	--	--	289	-- / --	0.035	NO	HQ less than one, not detected
Chloromethane	0.50 - 10.0	0 / 5	--	--	5,500	-- / --	0.0018	NO	HQ less than one, not detected
cis-1,2-Dichloroethene	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
cis-1,3-Dichloropropene	0.50 - 10.0	0 / 5	--	--	24.4	-- / --	0.41	NO	HQ less than one, not detected
Cyclohexane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibromochloromethane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Ethylbenzene	0.50 - 10.0	0 / 5	--	--	453	-- / --	0.022	NO	HQ less than one, not detected
Isopropylbenzene	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
m- and p-Xylene	0.50 - 0.50	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methyl acetate	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-5
Site 86 Surface Water (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Methylcyclohexane	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methylene chloride	0.54 - 10.0	0 / 5	--	--	1,930	-- / --	0.0052	NO	HQ less than one, not detected
Methyl-tert-butyl ether (MTBE)	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
o-Xylene	0.50 - 0.50	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Styrene	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Tetrachloroethene	0.50 - 10.0	0 / 5	--	--	84.0	-- / --	0.12	NO	HQ less than one, not detected
Toluene	0.50 - 10.0	0 / 5	--	--	175	-- / --	0.057	NO	HQ less than one, not detected
trans-1,2-Dichloroethene	0.50 - 10.0	0 / 5	--	--	1,350	-- / --	0.0074	NO	HQ less than one, not detected
trans-1,3-Dichloropropene	0.50 - 10.0	0 / 5	--	--	24.4	-- / --	0.41	NO	HQ less than one, not detected
Trichloroethene	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Trichlorofluoromethane (Freon-11)	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Vinyl chloride	0.50 - 10.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Xylene, total	10.0 - 10.0	0 / 3	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Semivolatile Organic Compounds (µg/L)									
1,1-Biphenyl	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,4,5-Tetrachlorobenzene	5.40 - 5.90	0 / 2	--	--	50.0	-- / --	0.12	NO	HQ less than one, not detected
2,2'-Oxybis(1-chloropropane)	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,3,4,6-Tetrachlorophenol	5.40 - 5.90	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	5.40 - 26.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,6-Trichlorophenol	5.40 - 11.0	0 / 5	--	--	3.20	-- / --	3.44	YES	(2) Not detected, HQ above one
2,4-Dichlorophenol	5.40 - 11.0	0 / 5	--	--	36.5	-- / --	0.30	NO	HQ less than one, not detected
2,4-Dimethylphenol	5.40 - 11.0	0 / 5	--	--	21.2	-- / --	0.52	NO	HQ less than one, not detected
2,4-Dinitrophenol	11.0 - 26.0	0 / 5	--	--	6.20	-- / --	4.19	YES	(2) Not detected, HQ above one
2,4-Dinitrotoluene	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chloronaphthalene	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chlorophenol	5.40 - 11.0	0 / 5	--	--	43.8	-- / --	0.25	NO	HQ less than one, not detected
2-Methylnaphthalene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Methylphenol	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitroaniline	11.0 - 26.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitrophenol	5.40 - 11.0	0 / 5	--	--	3,500	-- / --	0.0031	NO	HQ less than one, not detected
3,3'-Dichlorobenzidine	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3-Nitroaniline	11.0 - 26.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	11.0 - 26.0	0 / 5	--	--	2.30	-- / --	11.3	YES	(2) Not detected, HQ above one
4-Bromophenyl-phenylether	5.40 - 11.0	0 / 5	--	--	12.2	-- / --	0.90	NO	HQ less than one, not detected
4-Chloro-3-methylphenol	5.40 - 11.0	0 / 5	--	--	0.30	-- / --	36.7	YES	(2) Not detected, HQ above one
4-Chloroaniline	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chlorophenyl-phenylether	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methylphenol	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Nitroaniline	11.0 - 26.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-5
Site 86 Surface Water (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
4-Nitrophenol	11.0 - 26.0	0 / 5	--	--	82.8	-- / --	0.31	NO	HQ less than one, not detected
Acenaphthene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acenaphthylene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetophenone	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Anthracene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Atrazine	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzaldehyde	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(a)anthracene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(a)pyrene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(b)fluoranthene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(g,h,i)perylene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(k)fluoranthene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethoxy)methane	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	5.40 - 11.0	0 / 5	--	--	2,380	-- / --	0.0046	NO	HQ less than one, not detected
bis(2-Ethylhexyl)phthalate	5.40 - 11.0	0 / 5	--	--	0.30	-- / --	36.7	YES	(2) Not detected, HQ above one
Butylbenzylphthalate	5.40 - 11.0	0 / 5	--	--	22.0	-- / --	0.50	NO	HQ less than one, not detected
Caprolactam	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbazole	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chrysene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibenz(a,h)anthracene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibenzofuran	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Diethylphthalate	5.40 - 11.0	0 / 5	--	--	521	-- / --	0.021	NO	HQ less than one, not detected
Dimethyl phthalate	5.40 - 11.0	0 / 5	--	--	330	-- / --	0.033	NO	HQ less than one, not detected
Di-n-butylphthalate	5.40 - 11.0	0 / 5	--	--	9.40	-- / --	1.17	YES	(2) Not detected, HQ above one
Di-n-octylphthalate	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Fluoranthene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Fluorene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobenzene	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobutadiene	5.40 - 11.0	0 / 5	--	--	0.93	-- / --	11.8	YES	(2) Not detected, HQ above one
Hexachlorocyclopentadiene	5.40 - 11.0	0 / 5	--	--	0.070	-- / --	157	YES	(2) Not detected, HQ above one
Hexachloroethane	5.40 - 11.0	0 / 5	--	--	9.80	-- / --	1.12	YES	(2) Not detected, HQ above one
Indeno(1,2,3-cd)pyrene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Isophorone	5.40 - 11.0	0 / 5	--	--	1,170	-- / --	0.0094	NO	HQ less than one, not detected
Naphthalene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
n-Nitroso-di-n-propylamine	5.40 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	5.40 - 11.0	0 / 5	--	--	58.5	-- / --	0.19	NO	HQ less than one, not detected
Nitrobenzene	5.40 - 11.0	0 / 5	--	--	270	-- / --	0.041	NO	HQ less than one, not detected
Pentachlorophenol	0.22 - 26.0	0 / 5	--	--	15.0	-- / --	1.73	YES	(2) Not detected, HQ above one
Phenanthrene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Phenol	5.40 - 11.0	0 / 5	--	--	256	-- / --	0.043	NO	HQ less than one, not detected

TABLE I-5
Site 86 Surface Water (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Pyrene	0.11 - 11.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Pesticide/Polychlorinated Biphenyls (µg/L)									
4,4'-DDD	0.10 - 0.11	0 / 5	--	--	0.0064	-- / --	17.2	YES	(2) Not detected, HQ above one
4,4'-DDE	0.10 - 0.11	0 / 5	--	--	10.5	-- / --	0.010	NO	HQ less than one, not detected
4,4'-DDT	0.10 - 0.11	0 / 5	--	--	0.0010	-- / --	110	YES	(2) Not detected, HQ above one
Aldrin	0.050 - 0.056	0 / 5	--	--	0.30	-- / --	0.19	NO	HQ less than one, not detected
alpha-BHC	0.050 - 0.056	0 / 5	--	--	500	-- / --	1.12E-04	NO	HQ less than one, not detected
alpha-Chlordane	0.050 - 0.056	0 / 5	--	--	0.0043	-- / --	13.0	YES	(2) Not detected, HQ above one
Aroclor-1016	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1221	1.00 - 2.00	0 / 5	--	--	0.014	-- / --	143	YES	(2) Not detected, HQ above one
Aroclor-1232	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1242	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1248	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1254	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1260	1.00 - 1.10	0 / 5	--	--	0.014	-- / --	78.6	YES	(2) Not detected, HQ above one
Aroclor-1262	1.00 - 1.10	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Aroclor-1268	1.00 - 1.10	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
beta-BHC	0.050 - 0.056	0 / 5	--	--	5,000	-- / --	1.12E-05	NO	HQ less than one, not detected
delta-BHC	0.050 - 0.056	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dieldrin	0.10 - 0.11	0 / 5	--	--	0.056	-- / --	1.96	YES	(2) Not detected, HQ above one
Endosulfan I	0.050 - 0.056	0 / 5	--	--	0.056	-- / --	1.00	YES	(2) Not detected, HQ above one
Endosulfan II	0.10 - 0.11	0 / 5	--	--	0.056	-- / --	1.96	YES	(2) Not detected, HQ above one
Endosulfan sulfate	0.10 - 0.11	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin	0.10 - 0.11	0 / 5	--	--	0.036	-- / --	3.06	YES	(2) Not detected, HQ above one
Endrin aldehyde	0.10 - 0.11	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin ketone	0.10 - 0.11	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
gamma-BHC (Lindane)	0.050 - 0.056	0 / 5	--	--	0.080	-- / --	0.70	NO	HQ less than one, not detected
gamma-Chlordane	0.023 - 0.051	0 / 5	--	--	0.0043	-- / --	11.9	YES	(2) Not detected, HQ above one
Heptachlor	0.050 - 0.056	0 / 5	--	--	0.053	-- / --	1.06	YES	(2) Not detected, HQ above one
Heptachlor epoxide	0.017 - 0.056	0 / 5	--	--	0.0038	-- / --	14.7	YES	(2) Not detected, HQ above one
Methoxychlor	0.50 - 0.56	0 / 5	--	--	0.030	-- / --	18.7	YES	(2) Not detected, HQ above one
Toxaphene	5.00 - 5.60	0 / 5	--	--	0.0020	-- / --	2,800	YES	(2) Not detected, HQ above one
Inorganics (µg/L)									
Aluminum	200 - 200	3 / 5	151	IR86-SW02-07D	87.0	3 / 5	1.74	YES	(1) HQ above one, detected
Antimony	60.0 - 60.0	0 / 5	--	--	160	-- / --	0.38	NO	HQ less than one, not detected
Arsenic	10.0 - 10.0	1 / 5	3.00	IR86-SW03-07D	150	0 / 5	0.020	NO	HQ less than one, detected
Barium	-- - --	5 / 5	9.20	IR86-SW01-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Beryllium	5.00 - 5.00	0 / 5	--	--	0.53	-- / --	9.43	YES	(2) Not detected, HQ above one
Cadmium	5.00 - 5.00	0 / 5	--	--	0.25	-- / --	20.0	YES	(2) Not detected, HQ above one
Calcium [4]	-- - --	5 / 5	22,300	IR86-SW02-08B	NSV	-- / --	NSV	NO	Macronutrient

TABLE I-5
Site 86 Surface Water (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Chromium	10.0 - 10.0	0 / 5	--	--	117	-- / --	0.085	NO	HQ less than one, not detected
Cobalt	50.0 - 50.0	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Copper	25.0 - 25.0	0 / 5	--	--	9.00	-- / --	2.78	YES	(2) Not detected, HQ above one
Cyanide	10.0 - 10.0	0 / 3	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Iron	-- - --	5 / 5	714	IR86-SW02-08B	1,000	0 / 5	0.71	NO	HQ less than one, detected
Lead	10.0 - 10.0	2 / 5	2.70	IR86-SW02-08B	25.0	0 / 5	0.11	NO	HQ less than one, detected
Magnesium [4]	5,000 - 5,000	3 / 5	1,040	IR86-SW02-07D	NSV	-- / --	NSV	NO	Macronutrient
Manganese	15.0 - 21.6	3 / 5	5.10	IR86-SW02-07D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Mercury	0.20 - 0.20	0 / 3	--	--	0.77	-- / --	0.26	NO	HQ less than one, not detected
Nickel	40.0 - 40.0	2 / 5	0.78	IR86-SW03-07D	52.0	0 / 5	0.015	NO	HQ less than one, detected
Potassium [4]	-- - --	5 / 5	2,400	IR86-SW03-07D	NSV	-- / --	NSV	NO	Macronutrient
Selenium	35.0 - 35.0	0 / 5	--	--	5.00	-- / --	7.00	YES	(2) Not detected, HQ above one
Silver	10.0 - 10.0	0 / 5	--	--	0.012	-- / --	833	YES	(2) Not detected, HQ above one
Sodium [4]	5,000 - 5,000	3 / 5	35,400	IR86-SW02-07D	NSV	-- / --	NSV	NO	Macronutrient
Thallium	25.0 - 25.0	0 / 5	--	--	4.00	-- / --	6.25	YES	(2) Not detected, HQ above one
Vanadium	-- - --	5 / 5	2.30	IR86-SW02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Zinc	60.0 - 60.0	0 / 5	--	--	120	-- / --	0.50	NO	HQ less than one, not detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Fresh water screening values
[2] - Count of detected samples exceeding or equaling Screening Value
[3] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:
Category 1 – Contaminants with a maximum detection exceeding the ESV
Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV
Category 3 – Detected contaminants with no ESV
Category 4 – Undetected contaminants with no ESV
[4] - Macronutrient - Not considered to be a COPC

µg/L - Micrograms per liter
COPC - Contaminant of potential concern
HQ - Hazard quotient
mg/L - Milligrams per liter
NSV - No screening value

Generated By: S.Kent/ATL
Checked By: J.Weier/ATL

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Volatile Organic Compounds (µg/L)									
1,1,1-Trichloroethane	1.00 - 1.00	0 / 6	--	--	528	-- / --	0.0019	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	0.50 - 0.50	0 / 6	--	--	240	-- / --	0.0021	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	1.00 - 1.00	0 / 6	--	--	940	-- / --	0.0011	NO	HQ less than one, not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethene	1.00 - 1.00	0 / 6	--	--	303	-- / --	0.0033	NO	HQ less than one, not detected
1,2,4-Trichlorobenzene	0.50 - 0.50	0 / 6	--	--	44.9	-- / --	0.011	NO	HQ less than one, not detected
1,2-Dibromo-3-chloropropane	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromoethane	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	1.00 - 1.00	0 / 6	--	--	15.8	-- / --	0.063	NO	HQ less than one, not detected
1,2-Dichloroethane	0.50 - 0.50	0 / 6	--	--	2,000	-- / --	2.50E-04	NO	HQ less than one, not detected
1,2-Dichloropropane	0.50 - 0.50	0 / 6	--	--	525	-- / --	9.52E-04	NO	HQ less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 6	--	--	50.2	-- / --	0.020	NO	HQ less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 6	--	--	11.2	-- / --	0.089	NO	HQ less than one, not detected
2-Butanone	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Hexanone	5.00 - 5.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	5.00 - 5.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetone	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzene	1.00 - 1.00	0 / 6	--	--	53.0	-- / --	0.019	NO	HQ less than one, not detected
Bromodichloromethane	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromoform	1.00 - 1.00	0 / 6	--	--	293	-- / --	0.0034	NO	HQ less than one, not detected
Bromomethane	1.00 - 1.00	0 / 6	--	--	110	-- / --	0.0091	NO	HQ less than one, not detected
Carbon disulfide	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon tetrachloride	0.50 - 0.50	0 / 6	--	--	352	-- / --	0.0014	NO	HQ less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 6	--	--	195	-- / --	0.0051	NO	HQ less than one, not detected
Chloroethane	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroform	1.00 - 1.00	0 / 6	--	--	289	-- / --	0.0035	NO	HQ less than one, not detected
Chloromethane	1.00 - 1.00	5 / 6	0.30	IR86-SW110-09D	5,500	0 / 6	5.45E-05	NO	HQ less than one, detected
cis-1,2-Dichloroethene	1.00 - 1.00	2 / 6	0.13	IR86-SW113-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
cis-1,3-Dichloropropene	0.50 - 0.50	0 / 6	--	--	24.4	-- / --	0.020	NO	HQ less than one, not detected
Cyclohexane	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibromochloromethane	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Ethylbenzene	1.00 - 1.00	0 / 6	--	--	453	-- / --	0.0022	NO	HQ less than one, not detected
Isopropylbenzene	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methyl acetate	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Methylcyclohexane	5.00 - 5.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methylene chloride	1.00 - 1.00	0 / 6	--	--	1,930	-- / --	5.18E-04	NO	HQ less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Styrene	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Tetrachloroethene	1.00 - 1.00	2 / 6	0.26	IR86-SW113-09D	84.0	0 / 6	0.0031	NO	HQ less than one, detected
Toluene	1.00 - 1.00	1 / 6	0.57	IR86-SW105-09D	175	0 / 6	0.0033	NO	HQ less than one, detected
trans-1,2-Dichloroethene	1.00 - 1.00	0 / 6	--	--	1,350	-- / --	7.41E-04	NO	HQ less than one, not detected
trans-1,3-Dichloropropene	0.50 - 0.50	0 / 6	--	--	24.4	-- / --	0.020	NO	HQ less than one, not detected
Trichloroethene	0.50 - 0.50	2 / 6	0.19	IR86-SW113-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Trichlorofluoromethane (Freon-11)	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Vinyl chloride	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Xylene, total	0.50 - 0.50	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Semivolatile Organic Compounds (µg/L)									
1,1-Biphenyl	5.10 - 5.20	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,2'-Oxybis(1-chloropropane)	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,6-Trichlorophenol	5.10 - 5.20	0 / 6	--	--	3.20	-- / --	1.63	YES	(2) Not detected, HQ above one
2,4-Dichlorophenol	1.00 - 1.00	0 / 6	--	--	36.5	-- / --	0.027	NO	HQ less than one, not detected
2,4-Dimethylphenol	1.00 - 1.00	0 / 6	--	--	21.2	-- / --	0.047	NO	HQ less than one, not detected
2,4-Dinitrophenol	5.10 - 5.20	0 / 6	--	--	6.20	-- / --	0.84	NO	HQ less than one, not detected
2,4-Dinitrotoluene	2.00 - 2.10	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chloronaphthalene	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chlorophenol	1.00 - 1.00	0 / 6	--	--	43.8	-- / --	0.023	NO	HQ less than one, not detected
2-Methylnaphthalene	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Methylphenol	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitroaniline	2.00 - 2.10	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitrophenol	10.0 - 10.0	0 / 6	--	--	3,500	-- / --	0.0029	NO	HQ less than one, not detected
3- and 4-Methylphenol	2.00 - 2.10	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	5.10 - 5.20	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3-Nitroaniline	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	10.0 - 10.0	0 / 6	--	--	2.30	-- / --	4.35	YES	(2) Not detected, HQ above one
4-Bromophenyl-phenylether	1.00 - 1.00	0 / 6	--	--	12.2	-- / --	0.082	NO	HQ less than one, not detected
4-Chloro-3-methylphenol	1.00 - 1.00	0 / 6	--	--	0.30	-- / --	3.33	YES	(2) Not detected, HQ above one
4-Chloroaniline	5.10 - 5.20	0 / 5	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chlorophenyl-phenylether	5.10 - 5.20	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Nitroaniline	2.00 - 2.10	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
4-Nitrophenol	5.10 - 5.20	0 / 6	--	--	82.8	-- / --	0.063	NO	HQ less than one, not detected
Acenaphthene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acenaphthylene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetophenone	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Anthracene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Atrazine	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzaldehyde	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(a)anthracene	0.20 - 0.21	3 / 6	0.15	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Benzo(a)pyrene	0.20 - 0.21	1 / 6	0.034	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Benzo(b)fluoranthene	0.20 - 0.21	2 / 6	0.083	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Benzo(g,h,i)perylene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(k)fluoranthene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethoxy)methane	5.10 - 5.20	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	1.00 - 1.00	0 / 6	--	--	2,380	-- / --	4.20E-04	NO	HQ less than one, not detected
bis(2-Ethylhexyl)phthalate	5.10 - 5.20	0 / 6	--	--	0.30	-- / --	17.3	YES	(2) Not detected, HQ above one
Butylbenzylphthalate	2.00 - 2.10	0 / 6	--	--	22.0	-- / --	0.095	NO	HQ less than one, not detected
Caprolactam	10.0 - 10.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbazole	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chrysene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibenz(a,h)anthracene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibenzofuran	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Diethylphthalate	1.00 - 1.00	0 / 6	--	--	521	-- / --	0.0019	NO	HQ less than one, not detected
Dimethyl phthalate	5.10 - 5.20	0 / 6	--	--	330	-- / --	0.016	NO	HQ less than one, not detected
Di-n-butylphthalate	5.10 - 5.20	2 / 6	0.36	IR86-SW106-09D	9.40	0 / 6	0.038	NO	HQ less than one, detected
Di-n-octylphthalate	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Fluoranthene	0.20 - 0.21	4 / 6	0.092	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Fluorene	0.20 - 0.21	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobenzene	1.00 - 1.00	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobutadiene	1.00 - 1.00	0 / 6	--	--	0.93	-- / --	1.08	YES	(2) Not detected, HQ above one
Hexachlorocyclopentadiene	10.0 - 10.0	0 / 6	--	--	0.070	-- / --	143	YES	(2) Not detected, HQ above one
Hexachloroethane	5.10 - 5.20	0 / 6	--	--	9.80	-- / --	0.53	NO	HQ less than one, not detected
Indeno(1,2,3-cd)pyrene	0.20 - 0.21	1 / 6	0.068	IR86-SW106-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Isophorone	5.10 - 5.20	0 / 6	--	--	1,170	-- / --	0.0044	NO	HQ less than one, not detected
Naphthalene	0.20 - 0.21	1 / 6	0.19	IR86-SW105-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
n-Nitroso-di-n-propylamine	5.10 - 5.20	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	5.10 - 5.20	0 / 6	--	--	58.5	-- / --	0.089	NO	HQ less than one, not detected
Nitrobenzene	1.00 - 1.00	0 / 6	--	--	270	-- / --	0.0037	NO	HQ less than one, not detected

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Pentachlorophenol	5.10 - 5.20	0 / 6	--	--	15.0	-- / --	0.35	NO	HQ less than one, not detected
Phenanthrene	0.20 - 0.21	2 / 6	0.037	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Phenol	1.00 - 1.00	0 / 6	--	--	256	-- / --	0.0039	NO	HQ less than one, not detected
Pyrene	0.20 - 0.21	4 / 6	0.079	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Pesticide/Polychlorinated Biphenyls (µg/L)									
4,4'-DDD	0.026 - 0.026	0 / 6	--	--	0.0064	-- / --	4.06	YES	(2) Not detected, HQ above one
4,4'-DDE	0.026 - 0.026	0 / 6	--	--	10.5	-- / --	0.0025	NO	HQ less than one, not detected
4,4'-DDT	0.026 - 0.026	0 / 6	--	--	0.0010	-- / --	26.0	YES	(2) Not detected, HQ above one
Aldrin	0.026 - 0.026	0 / 6	--	--	0.30	-- / --	0.087	NO	HQ less than one, not detected
alpha-BHC	0.026 - 0.026	0 / 6	--	--	500	-- / --	5.20E-05	NO	HQ less than one, not detected
alpha-Chlordane	0.026 - 0.026	0 / 6	--	--	0.0043	-- / --	6.05	YES	(2) Not detected, HQ above one
Aroclor-1016	0.26 - 0.26	0 / 6	--	--	0.014	-- / --	18.6	YES	(2) Not detected, HQ above one
Aroclor-1221	0.51 - 0.53	0 / 6	--	--	0.014	-- / --	37.9	YES	(2) Not detected, HQ above one
Aroclor-1232	0.61 - 0.63	0 / 6	--	--	0.014	-- / --	45.0	YES	(2) Not detected, HQ above one
Aroclor-1242	0.51 - 0.53	0 / 6	--	--	0.014	-- / --	37.9	YES	(2) Not detected, HQ above one
Aroclor-1248	0.51 - 0.53	0 / 6	--	--	0.014	-- / --	37.9	YES	(2) Not detected, HQ above one
Aroclor-1254	0.51 - 0.53	0 / 6	--	--	0.014	-- / --	37.9	YES	(2) Not detected, HQ above one
Aroclor-1260	0.26 - 0.26	0 / 6	--	--	0.014	-- / --	18.6	YES	(2) Not detected, HQ above one
beta-BHC	0.026 - 0.026	0 / 6	--	--	5,000	-- / --	5.20E-06	NO	HQ less than one, not detected
delta-BHC	0.026 - 0.026	1 / 6	0.014	IR86-SW108-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Dieldrin	0.026 - 0.026	0 / 6	--	--	0.056	-- / --	0.46	NO	HQ less than one, not detected
Endosulfan I	0.026 - 0.026	0 / 6	--	--	0.056	-- / --	0.46	NO	HQ less than one, not detected
Endosulfan II	0.026 - 0.026	2 / 6	0.057	IR86-SW106-09D	0.056	1 / 6	1.02	YES	(1) HQ above one, detected
Endosulfan sulfate	0.026 - 0.026	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin	0.026 - 0.026	0 / 6	--	--	0.036	-- / --	0.72	NO	HQ less than one, not detected
Endrin aldehyde	0.026 - 0.026	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin ketone	0.026 - 0.026	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
gamma-BHC (Lindane)	0.026 - 0.026	0 / 6	--	--	0.080	-- / --	0.33	NO	HQ less than one, not detected
gamma-Chlordane	0.026 - 0.026	0 / 6	--	--	0.0043	-- / --	6.05	YES	(2) Not detected, HQ above one
Heptachlor	0.026 - 0.026	0 / 6	--	--	0.053	-- / --	0.49	NO	HQ less than one, not detected
Heptachlor epoxide	0.026 - 0.026	0 / 6	--	--	0.0038	-- / --	6.84	YES	(2) Not detected, HQ above one
Methoxychlor	0.10 - 0.10	0 / 6	--	--	0.030	-- / --	3.33	YES	(2) Not detected, HQ above one
Toxaphene	0.26 - 0.26	0 / 6	--	--	0.0020	-- / --	130	YES	(2) Not detected, HQ above one
Inorganics (µg/L)									
Aluminum	200 - 200	4 / 6	3,800	IR86-SW110-09D	87.0	4 / 6	43.7	YES	(1) HQ above one, detected
Antimony	10.0 - 10.0	0 / 6	--	--	160	-- / --	0.063	NO	HQ less than one, not detected
Arsenic	10.0 - 10.0	0 / 6	--	--	150	-- / --	0.067	NO	HQ less than one, not detected

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Barium	-- - --	6 / 6	67.0	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Beryllium	4.00 - 4.00	0 / 6	--	--	0.53	-- / --	7.55	YES	(2) Not detected, HQ above one
Cadmium	2.00 - 2.00	1 / 6	2.10	IR86-SW110-09D	0.25	1 / 6	8.40	YES	(1) HQ above one, detected
Calcium [4]	-- - --	6 / 6	75,000	IR86-SW105-09D	NSV	-- / --	NSV	NO	Macronutrient
Chromium	5.00 - 5.00	1 / 6	12.0	IR86-SW110-09D	117	0 / 6	0.10	NO	HQ less than one, detected
Cobalt	25.0 - 25.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Copper	5.00 - 5.00	3 / 6	11.0	IR86-SW110-09D	9.00	1 / 6	1.22	YES	(1) HQ above one, detected
Iron	-- - --	6 / 6	33,000	IR86-SW110-09D	1,000	4 / 6	33.0	YES	(1) HQ above one, detected
Lead	10.0 - 10.0	2 / 6	10.0	IR86-SW110-09D	25.0	0 / 6	0.40	NO	HQ less than one, detected
Magnesium [4]	-- - --	6 / 6	4,600	IR86-SW113-09D	NSV	-- / --	NSV	NO	Macronutrient
Manganese	-- - --	6 / 6	410	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Mercury	0.10 - 0.10	0 / 6	--	--	0.77	-- / --	0.13	NO	HQ less than one, not detected
Nickel	40.0 - 40.0	0 / 6	--	--	52.0	-- / --	0.77	NO	HQ less than one, not detected
Potassium [4]	5,000 - 5,000	5 / 6	3,400	IR86-SW105-09D	NSV	-- / --	NSV	NO	Macronutrient
Selenium	10.0 - 10.0	0 / 6	--	--	5.00	-- / --	2.00	YES	(2) Not detected, HQ above one
Silver	5.00 - 5.00	0 / 6	--	--	0.012	-- / --	417	YES	(2) Not detected, HQ above one
Sodium [4]	-- - --	6 / 6	22,000	IR86-SW113-09D	NSV	-- / --	NSV	NO	Macronutrient
Thallium	50.0 - 50.0	0 / 6	--	--	4.00	-- / --	12.5	YES	(2) Not detected, HQ above one
Vanadium	50.0 - 50.0	1 / 6	22.0	IR86-SW110-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Zinc	20.0 - 20.0	4 / 6	84.0	IR86-SW110-09D	120	0 / 6	0.70	NO	HQ less than one, detected
Dissolved Metals (µg/L)									
Aluminum, Dissolved	500 - 500	0 / 6	--	--	87.0	-- / --	5.75	YES	(2) Not detected, HQ above one
Antimony, Dissolved	10.0 - 10.0	0 / 6	--	--	160	-- / --	0.063	NO	HQ less than one, not detected
Arsenic, Dissolved	10.0 - 10.0	0 / 6	--	--	150	-- / --	0.067	NO	HQ less than one, not detected
Barium, Dissolved	-- - --	6 / 6	24.0	IR86-SW105-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Beryllium, Dissolved	4.00 - 4.00	0 / 6	--	--	0.53	-- / --	7.55	YES	(2) Not detected, HQ above one
Cadmium, Dissolved	2.00 - 2.00	0 / 6	--	--	0.25	-- / --	8.00	YES	(2) Not detected, HQ above one
Calcium, Dissolved [4]	-- - --	6 / 6	74,000	IR86-SW105-09D	NSV	-- / --	NSV	NO	Macronutrient
Chromium, Dissolved	5.00 - 5.00	0 / 6	--	--	117	-- / --	0.043	NO	HQ less than one, not detected
Cobalt, Dissolved	25.0 - 25.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Copper, Dissolved	5.00 - 5.00	0 / 6	--	--	9.00	-- / --	0.56	NO	HQ less than one, not detected
Iron, Dissolved	100 - 100	2 / 6	82.0	IR86-SW105-09D	1000	-- / --	0.10	NO	HQ less than one, detected
Lead, Dissolved	10.0 - 10.0	1 / 6	3.30	IR86-SW106-09D	25.0	0 / 6	0.13	NO	HQ less than one, detected
Magnesium, Dissolved [4]	-- - --	6 / 6	4,400	IR86-SW113-09D	NSV	-- / --	NSV	NO	Macronutrient
Manganese, Dissolved	-- - --	6 / 6	69.0	IR86-SW112-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Mercury, Dissolved	0.10 - 0.10	0 / 6	--	--	0.77	-- / --	0.13	NO	HQ less than one, not detected
Nickel, Dissolved	40.0 - 40.0	0 / 6	--	--	52.0	-- / --	0.77	NO	HQ less than one, not detected

TABLE I-6
Site 86 Surface Water (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[3]
Potassium, Dissolved [4]	5,000 - 5,000	5 / 6	4,000	IR86-SW106-09D	NSV	-- / --	NSV	NO	Macronutrient
Selenium, Dissolved	10.0 - 10.0	0 / 6	--	--	5.00	-- / --	2.00	YES	(2) Not detected, HQ above one
Silver, Dissolved	5.00 - 5.00	0 / 6	--	--	0.012	-- / --	417	YES	(2) Not detected, HQ above one
Sodium, Dissolved [4]	5,000 - 5,000	5 / 6	21,000	IR86-SW113-09D	NSV	-- / --	NSV	NO	Macronutrient
Thallium, Dissolved	50.0 - 50.0	0 / 6	--	--	4.00	-- / --	12.5	YES	(2) Not detected, HQ above one
Vanadium, Dissolved	50.0 - 50.0	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Zinc, Dissolved	20.0 - 20.0	2 / 6	9.00	IR86-SW108-09D	120	0 / 6	0.075	NO	HQ less than one, detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Fresh water screening values

[2] - Count of detected samples exceeding or equaling Screening Value

[3] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:

Category 1 – Contaminants with a maximum detection exceeding the ESV

Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV

Category 3 – Detected contaminants with no ESV

Category 4 – Undetected contaminants with no ESV

[4] - Macronutrient - Not considered to be a COPC

µg/L - Micrograms per liter

COPC - Contaminant of potential concern

HQ - Hazard quotient

mg/L - Milligrams per liter

NSV - No screening value

Generated By: S.Kent/ATL

Checked By: J.Weier/ATL

TABLE I-7
Site 86 Groundwater Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[3]
Volatile Organic Compounds (µg/L)											
1,1,1-Trichloroethane	1.00 - 1.00	0 / 62	--	--	312	-- / --	0.0032	--	--	NO	HQ less than one, not detected
1,1,2,2-Tetrachloroethane	0.50 - 0.50	0 / 62	--	--	90.2	-- / --	0.0055	--	--	NO	HQ less than one, not detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	1.00 - 1.00	4 / 62	620	IR86-GW10IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
1,1,2-Trichloroethane	1.00 - 1.00	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,1-Dichloroethane	1.00 - 1.00	13 / 62	3.40	IR86-GW10IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
1,1-Dichloroethene	1.00 - 1.00	17 / 62	13.0	IR86-GW55IW-09D	2,240	0 / 62	0.0058	--	--	NO	HQ less than one, detected
1,2,4-Trichlorobenzene	0.50 - 0.50	0 / 62	--	--	4.50	-- / --	0.11	--	--	NO	HQ less than one, not detected
1,2-Dibromo-3-chloropropane	0.50 - 0.50	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dibromoethane	0.50 - 0.50	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	1.00 - 1.00	0 / 62	--	--	19.7	-- / --	0.051	--	--	NO	HQ less than one, not detected
1,2-Dichloroethane	0.50 - 0.50	0 / 62	--	--	1,130	-- / --	4.42E-04	--	--	NO	HQ less than one, not detected
1,2-Dichloropropane	0.50 - 0.50	0 / 62	--	--	2,400	-- / --	2.08E-04	--	--	NO	HQ less than one, not detected
1,3-Dichlorobenzene	1.00 - 1.00	0 / 62	--	--	28.5	-- / --	0.035	--	--	NO	HQ less than one, not detected
1,4-Dichlorobenzene	1.00 - 1.00	0 / 62	--	--	19.9	-- / --	0.050	--	--	NO	HQ less than one, not detected
2-Butanone	10.0 - 10.0	0 / 24	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Hexanone	5.00 - 5.00	1 / 62	14.0	IR86-GW63-10A	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
4-Methyl-2-pentanone	5.00 - 5.00	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Acetone	10.0 - 10.0	1 / 62	4.30	IR86-GW59IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzene	1.00 - 1.00	28 / 62	11.0	IR86-GW52-09D	109	0 / 62	0.10	--	--	NO	HQ less than one, detected
Bromodichloromethane	0.50 - 0.50	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Bromoform	1.00 - 1.00	0 / 62	--	--	640	-- / --	0.0016	--	--	NO	HQ less than one, not detected
Bromomethane	1.00 - 1.00	0 / 62	--	--	120	-- / --	0.0083	--	--	NO	HQ less than one, not detected
Carbon disulfide	1.00 - 1.00	3 / 62	3.40	IR86-GW58DW-10A	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Carbon tetrachloride	0.50 - 0.50	0 / 62	--	--	1,500	-- / --	3.33E-04	--	--	NO	HQ less than one, not detected
Chlorobenzene	1.00 - 1.00	0 / 62	--	--	105	-- / --	0.0095	--	--	NO	HQ less than one, not detected
Chloroethane	1.00 - 1.00	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Chloroform	1.00 - 1.00	7 / 62	2.00	IR86-GW58-09D	815	0 / 62	0.0025	--	--	NO	HQ less than one, detected
Chloromethane	1.00 - 1.00	4 / 62	0.35	IR86-GW34IW-09D	2,700	0 / 62	1.30E-04	--	--	NO	HQ less than one, detected
cis-1,2-Dichloroethene	1.00 - 1.00	35 / 62	350	IR86-GW15IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
cis-1,3-Dichloropropene	0.50 - 0.50	0 / 62	--	--	7.90	-- / --	0.063	--	--	NO	HQ less than one, not detected
Cyclohexane	1.00 - 1.00	5 / 62	32.0	IR86-GW27IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Dibromochloromethane	0.50 - 0.50	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	4 / 62	51.0	IR86-GW10IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Ethylbenzene	1.00 - 1.00	4 / 62	4.60	IR86-GW52-09D	4.30	1 / 62	1.07	--	--	YES	(1) HQ above one, detected
Isopropylbenzene	1.00 - 1.00	2 / 62	0.46	IR86-GW52-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Methyl acetate	1.00 - 1.00	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Methylcyclohexane	5.00 - 5.00	2 / 62	4.10	IR86-GW47-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Methylene chloride	1.00 - 1.00	0 / 62	--	--	2,560	-- / --	3.91E-04	--	--	NO	HQ less than one, not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	1 / 62	66.0	IR86-GW39-10A	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Styrene	1.00 - 1.00	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Tetrachloroethene	1.00 - 1.00	3 / 62	190	IR86-GW10IW-09D	45.0	1 / 62	4.22	--	--	YES	(1) HQ above one, detected
Toluene	1.00 - 1.00	26 / 62	5.10	IR86-GW52-09D	37.0	0 / 62	0.14	--	--	NO	HQ less than one, detected
trans-1,2-Dichloroethene	1.00 - 1.00	16 / 62	16.0	IR86-GW55IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
trans-1,3-Dichloropropene	0.50 - 0.50	0 / 62	--	--	7.90	-- / --	0.063	--	--	NO	HQ less than one, not detected
Trichloroethene	0.50 - 0.50	28 / 62	710	IR86-GW58IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Trichlorofluoromethane (Freon-11)	0.50 - 0.50	0 / 62	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value

TABLE I-7
Site 86 Groundwater Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[3]
Vinyl chloride	0.50 - 0.50	13 / 62	140	IR86-GW55IW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Xylene, total	0.50 - 0.50	3 / 62	6.80	IR86-GW52-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Semivolatile Organic Compounds (µg/L)											
1,1-Biphenyl	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,2'-Oxybis(1-chloropropane)	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4,6-Trichlorophenol	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4-Dichlorophenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4-Dimethylphenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,4-Dinitrophenol	5.00 - 5.60	0 / 16	--	--	48.5	-- / --	0.12	--	--	NO	HQ less than one, not detected
2,4-Dinitrotoluene	2.00 - 2.20	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Chloronaphthalene	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Chlorophenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Methylnaphthalene	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Methylphenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Nitroaniline	2.00 - 2.20	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
2-Nitrophenol	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
3-Nitroaniline	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Bromophenyl-phenylether	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloro-3-methylphenol	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chloroaniline	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Chlorophenyl-phenylether	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Methylphenol	2.00 - 2.20	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Nitroaniline	2.00 - 2.20	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
4-Nitrophenol	5.00 - 5.60	0 / 16	--	--	71.7	-- / --	0.078	--	--	NO	HQ less than one, not detected
Acenaphthene	0.20 - 0.22	0 / 17	--	--	9.70	-- / --	0.023	--	--	NO	HQ less than one, not detected
Acenaphthylene	0.20 - 0.27	5 / 17	0.30	IR86-GW56-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Acetophenone	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Anthracene	0.20 - 0.22	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Atrazine	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Benzaldehyde	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Benzo(a)anthracene	0.20 - 0.22	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Benzo(a)pyrene	0.20 - 0.22	1 / 16	0.20	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzo(b)fluoranthene	0.20 - 0.22	3 / 16	0.38	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzo(g,h,i)perylene	0.20 - 0.22	1 / 16	0.46	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Benzo(k)fluoranthene	0.20 - 0.22	1 / 16	0.31	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
bis(2-Chloroethoxy)methane	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
bis(2-Ethylhexyl)phthalate	5.00 - 5.60	2 / 16	0.33	IR86-GW61DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Butylbenzylphthalate	2.00 - 2.20	0 / 16	--	--	29.4	-- / --	0.075	--	--	NO	HQ less than one, not detected
Caprolactam	10.0 - 11.0	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Carbazole	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Chrysene	0.20 - 0.22	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value

TABLE I-7
Site 86 Groundwater Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[3]
Dibenz(a,h)anthracene	0.20 - 0.22	1 / 16	0.55	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Dibenzofuran	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Diethylphthalate	1.00 - 1.10	0 / 16	--	--	759	-- / --	0.0014	--	--	NO	HQ less than one, not detected
Dimethyl phthalate	5.00 - 5.60	0 / 16	--	--	580	-- / --	0.0097	--	--	NO	HQ less than one, not detected
Di-n-butylphthalate	5.00 - 5.60	1 / 16	0.20	IR86-GW61DW-09D	3.40	0 / 16	0.059	--	--	NO	HQ less than one, detected
Di-n-octylphthalate	1.00 - 1.10	0 / 15	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Fluoranthene	0.20 - 0.22	0 / 17	--	--	1.60	-- / --	0.14	--	--	NO	HQ less than one, not detected
Fluorene	0.20 - 0.22	3 / 17	0.12	IR86-GW60-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Hexachlorobenzene	1.00 - 1.10	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Hexachlorobutadiene	1.00 - 1.10	0 / 16	--	--	0.32	-- / --	3.44	--	--	YES	(2) Not detected, HQ above one
Hexachlorocyclopentadiene	10.0 - 11.0	0 / 16	--	--	0.070	-- / --	157	--	--	YES	(2) Not detected, HQ above one
Hexachloroethane	5.00 - 5.60	0 / 16	--	--	9.40	-- / --	0.60	--	--	NO	HQ less than one, not detected
Indeno(1,2,3-cd)pyrene	0.20 - 0.22	1 / 16	0.45	IR86-GW59DW-09D	NSV	-- / --	NSV	--	--	YES	(3) Detected, no screening value
Isophorone	5.00 - 5.60	0 / 16	--	--	129	-- / --	0.043	--	--	NO	HQ less than one, not detected
Naphthalene	0.20 - 0.22	1 / 17	0.19	IR86-GW58-09D	23.5	0 / 17	0.0081	--	--	NO	HQ less than one, detected
n-Nitroso-di-n-propylamine	5.00 - 5.60	0 / 16	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	5.00 - 5.60	0 / 16	--	--	33,000	-- / --	1.70E-04	--	--	NO	HQ less than one, not detected
Nitrobenzene	1.00 - 1.10	0 / 16	--	--	66.8	-- / --	0.016	--	--	NO	HQ less than one, not detected
Pentachlorophenol	5.00 - 5.60	0 / 16	--	--	7.90	-- / --	0.71	--	--	NO	HQ less than one, not detected
Phenanthrene	0.20 - 0.22	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Phenol	1.00 - 1.10	0 / 16	--	--	58.0	-- / --	0.019	--	--	NO	HQ less than one, not detected
Pyrene	0.20 - 0.22	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Pesticide/Polychlorinated Biphenyls (µg/L)											
4,4'-DDD	0.025 - 0.027	1 / 17	0.023	IR86-GW56-09D	0.025	0 / 17	0.92	--	--	NO	HQ less than one, detected
4,4'-DDE	0.025 - 0.027	0 / 17	--	--	0.14	-- / --	0.19	--	--	NO	HQ less than one, not detected
4,4'-DDT	0.025 - 0.027	0 / 17	--	--	0.0010	-- / --	27.0	--	--	YES	(2) Not detected, HQ above one
Aldrin	0.025 - 0.027	0 / 17	--	--	0.13	-- / --	0.21	--	--	NO	HQ less than one, not detected
alpha-BHC	0.025 - 0.027	0 / 17	--	--	1,400	-- / --	1.93E-05	--	--	NO	HQ less than one, not detected
alpha-Chlordane	0.025 - 0.027	0 / 17	--	--	0.0040	-- / --	6.75	--	--	YES	(2) Not detected, HQ above one
Aroclor-1016	0.25 - 0.27	0 / 17	--	--	0.030	-- / --	9.00	--	--	YES	(2) Not detected, HQ above one
Aroclor-1221	0.50 - 0.55	0 / 17	--	--	0.030	-- / --	18.3	--	--	YES	(2) Not detected, HQ above one
Aroclor-1232	0.60 - 0.66	0 / 17	--	--	0.030	-- / --	22.0	--	--	YES	(2) Not detected, HQ above one
Aroclor-1242	0.50 - 0.55	0 / 17	--	--	0.030	-- / --	18.3	--	--	YES	(2) Not detected, HQ above one
Aroclor-1248	0.50 - 0.55	0 / 17	--	--	0.030	-- / --	18.3	--	--	YES	(2) Not detected, HQ above one
Aroclor-1254	0.50 - 0.55	0 / 17	--	--	0.030	-- / --	18.3	--	--	YES	(2) Not detected, HQ above one
Aroclor-1260	0.25 - 0.27	0 / 17	--	--	0.030	-- / --	9.00	--	--	YES	(2) Not detected, HQ above one
beta-BHC	0.025 - 0.027	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
delta-BHC	0.025 - 0.027	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Dieldrin	0.025 - 0.027	0 / 17	--	--	0.0019	-- / --	14.2	--	--	YES	(2) Not detected, HQ above one
Endosulfan I	0.025 - 0.027	0 / 17	--	--	0.0087	-- / --	3.10	--	--	YES	(2) Not detected, HQ above one
Endosulfan II	0.025 - 0.027	0 / 17	--	--	0.0087	-- / --	3.10	--	--	YES	(2) Not detected, HQ above one
Endosulfan sulfate	0.025 - 0.027	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Endrin	0.025 - 0.027	0 / 17	--	--	0.0023	-- / --	11.7	--	--	YES	(2) Not detected, HQ above one
Endrin aldehyde	0.025 - 0.027	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
Endrin ketone	0.025 - 0.027	0 / 17	--	--	NSV	-- / --	NSV	--	--	YES	(4) Not detected, no screening value
gamma-BHC (Lindane)	0.025 - 0.027	0 / 17	--	--	0.016	-- / --	1.69	--	--	YES	(2) Not detected, HQ above one

TABLE I-7
Site 86 Groundwater Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value[1]	Frequency of Exceedance[2]	Maximum Hazard Quotient	2 x Mean Background	Maximum Exceeds 2 x Mean Background?	Step 2 COPC?	Rationale[3]
gamma-Chlordane	0.025 - 0.027	0 / 17	--	--	0.0040	-- / --	6.75	--	--	YES	(2) Not detected, HQ above one
Heptachlor	0.025 - 0.027	0 / 17	--	--	0.0036	-- / --	7.50	--	--	YES	(2) Not detected, HQ above one
Heptachlor epoxide	0.025 - 0.027	0 / 17	--	--	0.0036	-- / --	7.50	--	--	YES	(2) Not detected, HQ above one
Methoxychlor	0.10 - 0.11	0 / 17	--	--	0.030	-- / --	3.67	--	--	YES	(2) Not detected, HQ above one
Toxaphene	0.25 - 0.27	0 / 17	--	--	0.0020	-- / --	135	--	--	YES	(2) Not detected, HQ above one
Inorganics (µg/L)											
Aluminum	200 - 390	8 / 15	1,300	IR86-GW64-09D	NSV	-- / --	NSV	1886	No	NO	Consistent with background
Antimony	10.0 - 10.0	2 / 15	3.40	IR86-GW58-09D	NSV	-- / --	NSV	3.28	Yes	YES	(3) Detected, no screening value
Arsenic	10.0 - 10.0	1 / 15	3.40	IR86-GW62-09D	36.0	0 / 15	0.094	5.77	No	NO	HQ less than one, detected
Barium	20.0 - 20.0	14 / 15	71.0	IR86-GW62-09D	NSV	-- / --	NSV	86.20	No	NO	Consistent with background
Beryllium	4.00 - 4.00	0 / 15	--	--	NSV	-- / --	NSV	0.31	Yes	YES	(4) Not detected, no screening value
Cadmium	2.00 - 2.00	0 / 15	--	--	8.80	-- / --	0.23	0.36	Yes	NO	HQ less than one, not detected
Calcium [4]	-- - --	15 / 15	290,000	IR86-GW60-09D	NSV	-- / --	NSV	69078	Yes	NO	Macronutrient
Chromium	5.00 - 12.0	4 / 15	76.0	IR86-GW59DW-09D	50.0	1 / 15	1.52	3.13	Yes	YES	(1) HQ above one, detected
Cobalt	25.0 - 25.0	0 / 15	--	--	NSV	-- / --	NSV	3.40	Yes	YES	(4) Not detected, no screening value
Copper	5.00 - 5.00	5 / 15	3.00	IR86-GW60-09D	3.10	0 / 15	0.97	2.76	Yes	NO	HQ less than one, detected
Iron	-- - --	19 / 19	11,000	IR86-GW58-09D	NSV	-- / --	NSV	5999	Yes	YES	(3) Detected, no screening value
Lead	10.0 - 10.0	8 / 15	7.00	IR86-GW60IW-09D	8.10	0 / 15	0.86	2.80	Yes	NO	HQ less than one, detected
Magnesium [4]	5,000 - 5,000	13 / 15	10,000	IR86-GW61DW-09D	NSV	-- / --	NSV	6363	Yes	NO	Macronutrient
Manganese	-- - --	19 / 19	170	IR86-GW58-09D	NSV	-- / --	NSV	214	No	NO	Consistent with background
Mercury	0.10 - 0.10	0 / 6	--	--	0.94	-- / --	0.11	0.10	Yes	NO	HQ less than one, not detected
Nickel	40.0 - 40.0	0 / 15	--	--	8.20	-- / --	4.88	7.97	Yes	YES	(2) Not detected, HQ above one
Potassium [4]	5,000 - 5,000	13 / 15	34,000	IR86-GW59DW-09D	NSV	-- / --	NSV	3277	Yes	NO	Macronutrient
Selenium	10.0 - 10.0	0 / 15	--	--	71.0	-- / --	0.14	3.14	Yes	NO	HQ less than one, not detected
Silver	5.00 - 5.00	9 / 15	2.50	IR86-GW58IW-09D	0.23	9 / 15	10.9	0.77	Yes	YES	(1) HQ above one, detected
Sodium [4]	-- - --	15 / 15	300,000	IR86-GW61DW-09D	NSV	-- / --	NSV	22508	Yes	NO	Macronutrient
Thallium	50.0 - 50.0	0 / 15	--	--	21.3	-- / --	2.35	3.78	Yes	YES	(2) Not detected, HQ above one
Vanadium	50.0 - 50.0	0 / 15	--	--	NSV	-- / --	NSV	4.72	Yes	YES	(4) Not detected, no screening value
Zinc	20.0 - 20.0	4 / 15	18.0	IR86-GW59IW-09D	81.0	0 / 15	0.22	42.10	No	NO	HQ less than one, detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Marine screening values

[2] - Count of detected samples exceeding or equaling Screening Value

[3] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:

Category 1 – Contaminants with a maximum detection exceeding the ESV

Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV

Category 3 – Detected contaminants with no ESV

Category 4 – Undetected contaminants with no ESV

[4] - Macronutrient - Not considered to be a COPC

µg/L - Micrograms per liter

COPC - Contaminant of potential concern

HQ - Hazard quotient

mg/L - Milligrams per liter

NSV - No screening value

Generated By: S.Kent/ATL

Checked By: J.Weier/ATL

TABLE I-8
Site 86 Sediment (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Volatile Organic Compounds (µg/kg)									
1,1,1-Trichloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2,2-Tetrachloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,3-Trichlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,4-Trichlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromo-3-chloropropane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromoethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichloropropane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,3-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,4-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Butanone	14.0 - 22.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Hexanone	14.0 - 22.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	14.0 - 22.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetone	57.0 - 100	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromochloromethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromodichloromethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromoform	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromomethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon disulfide	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon tetrachloride	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chlorobenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroform	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloromethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
cis-1,2-Dichloroethene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
cis-1,3-Dichloropropene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Cyclohexane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibromochloromethane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Ethylbenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Isopropylbenzene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
m- and p-Xylene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-8
Site 86 Sediment (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Methyl acetate	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methylcyclohexane	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methylene chloride	11.0 - 11.0	1 / 2	0.91	IR86-SD01-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Methyl-tert-butyl ether (MTBE)	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
o-Xylene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Styrene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Tetrachloroethene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Toluene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
trans-1,2-Dichloroethene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
trans-1,3-Dichloropropene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Trichloroethene	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Trichlorofluoromethane (Freon-11)	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Vinyl chloride	6.90 - 11.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Semivolatile Organic Compounds (µg/kg)									
1,1-Biphenyl	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,4,5-Tetrachlorobenzene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,2'-Oxybis(1-chloropropane)	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,3,4,6-Tetrachlorophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,6-Trichlorophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dichlorophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dimethylphenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dinitrophenol	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dinitrotoluene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chloronaphthalene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chlorophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Methylnaphthalene	4.60 - 7.30	0 / 2	--	--	23.2	-- / --	0.31	NO	HQ less than one, not detected
2-Methylphenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitroaniline	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitrophenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3-Nitroaniline	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Bromophenyl-phenylether	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chloro-3-methylphenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chloroaniline	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chlorophenyl-phenylether	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methylphenol	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-8
Site 86 Sediment (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
4-Nitroaniline	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Nitrophenol	460 - 730	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acenaphthene	4.60 - 7.30	0 / 2	--	--	6.71	-- / --	1.09	YES	(2) Not detected, HQ above one
Acenaphthylene	4.60 - 7.30	0 / 2	--	--	5.87	-- / --	1.24	YES	(2) Not detected, HQ above one
Acetophenone	240 - 240	1 / 2	110	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Anthracene	4.60 - 4.60	1 / 2	3.90	IR86-SD02-08B	46.9	0 / 2	0.083	NO	HQ less than one, detected
Atrazine	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzaldehyde	240 - 240	1 / 2	86.0	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Benzo(a)anthracene	4.60 - 4.60	1 / 2	15.0	IR86-SD02-08B	74.8	0 / 2	0.20	NO	HQ less than one, detected
Benzo(a)pyrene	-- - --	2 / 2	19.0	IR86-SD02-08B	88.8	0 / 2	0.21	NO	HQ less than one, detected
Benzo(b)fluoranthene	-- - --	2 / 2	38.0	IR86-SD02-08B	655	0 / 2	0.058	NO	HQ less than one, detected
Benzo(g,h,i)perylene	4.60 - 4.60	1 / 2	54.0	IR86-SD02-08B	655	0 / 2	0.082	NO	HQ less than one, detected
Benzo(k)fluoranthene	-- - --	2 / 2	31.0	IR86-SD02-08B	655	0 / 2	0.047	NO	HQ less than one, detected
bis(2-Chloroethoxy)methane	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Ethylhexyl)phthalate	-- - --	2 / 2	730	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Butylbenzylphthalate	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Caprolactam	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbazole	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chrysene	4.60 - 4.60	1 / 2	41.0	IR86-SD02-08B	108	0 / 2	0.38	NO	HQ less than one, detected
Dibenz(a,h)anthracene	4.60 - 4.60	1 / 2	7.50	IR86-SD02-08B	6.22	1 / 2	1.21	YES	(1) HQ above one, detected
Dibenzofuran	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Diethylphthalate	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dimethyl phthalate	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Di-n-butylphthalate	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Di-n-octylphthalate	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Fluoranthene	-- - --	2 / 2	62.0	IR86-SD02-08B	113	0 / 2	0.55	NO	HQ less than one, detected
Fluorene	4.60 - 7.30	0 / 2	--	--	21.2	-- / --	0.34	NO	HQ less than one, not detected
Hexachlorobenzene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobutadiene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorocyclopentadiene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachloroethane	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Indeno(1,2,3-cd)pyrene	-- - --	2 / 2	29.0	IR86-SD02-08B	655	0 / 2	0.044	NO	HQ less than one, detected
Isophorone	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Naphthalene	4.60 - 7.30	0 / 2	--	--	34.6	-- / --	0.21	NO	HQ less than one, not detected
n-Nitroso-di-n-propylamine	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Nitrobenzene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Pentachlorophenol	9.30 - 15.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-8
Site 86 Sediment (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Phenanthrene	4.60 - 4.60	1 / 2	13.0	IR86-SD02-08B	86.7	0 / 2	0.15	NO	HQ less than one, detected
Phenol	240 - 240	1 / 2	63.0	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Pyrene	4.60 - 4.60	1 / 2	54.0	IR86-SD02-08B	153	0 / 2	0.35	NO	HQ less than one, detected
Pesticide/Polychlorinated Biphenyls (µg/kg)									
4,4'-DDD	-- - --	2 / 2	16.0	IR86-SD02-08B	1.22	2 / 2	13.1	YES	(1) HQ above one, detected
4,4'-DDE	-- - --	2 / 2	47.0	IR86-SD02-08B	2.07	1 / 2	22.7	YES	(1) HQ above one, detected
4,4'-DDT	4.60 - 4.60	1 / 2	30.0	IR86-SD02-08B	1.19	1 / 2	25.2	YES	(1) HQ above one, detected
Aldrin	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
alpha-BHC	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
alpha-Chlordane	2.40 - 2.40	1 / 2	9.30	IR86-SD02-08B	0.50	1 / 2	18.6	YES	(1) HQ above one, detected
Aroclor-1016	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1221	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1232	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1242	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1248	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1254	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1260	46.0 - 73.0	0 / 2	--	--	21.6	-- / --	3.38	YES	(2) Not detected, HQ above one
Aroclor-1262	46.0 - 73.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Aroclor-1268	46.0 - 73.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
beta-BHC	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
delta-BHC	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dieldrin	4.60 - 7.30	0 / 2	--	--	0.020	-- / --	365	YES	(2) Not detected, HQ above one
Endosulfan I	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endosulfan II	4.60 - 7.30	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endosulfan sulfate	4.60 - 7.30	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin	4.60 - 7.30	0 / 2	--	--	0.020	-- / --	365	YES	(2) Not detected, HQ above one
Endrin aldehyde	4.60 - 7.30	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin ketone	4.60 - 7.30	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
gamma-BHC (Lindane)	2.40 - 3.80	0 / 2	--	--	0.32	-- / --	11.9	YES	(2) Not detected, HQ above one
gamma-Chlordane	-- - --	2 / 2	8.60	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Heptachlor	2.40 - 3.80	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Heptachlor epoxide	2.40 - 2.40	1 / 2	2.00	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Methoxychlor	24.0 - 38.0	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Toxaphene	240 - 380	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Inorganics (mg/kg)									
Aluminum	-- - --	2 / 2	5,320	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Antimony	-- - --	2 / 2	1.30	IR86-SD02-08B	2.00	0 / 2	0.65	NO	HQ less than one, detected
Arsenic	-- - --	2 / 2	2.70	IR86-SD02-08B	7.24	0 / 2	0.37	NO	HQ less than one, detected
Barium	-- - --	2 / 2	18.2	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value

TABLE I-8
Site 86 Sediment (Western Pond) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Beryllium	0.74 - 1.20	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Cadmium	0.74 - 0.74	1 / 2	1.10	IR86-SD02-08B	0.68	1 / 2	1.63	YES	(1) HQ above one, detected
Calcium [3]	736 - 736	1 / 2	56,200	IR86-SD02-08B	NSV	-- / --	NSV	NO	Macronutrient
Chromium	-- - --	2 / 2	13.8	IR86-SD02-08B	52.3	0 / 2	0.26	NO	HQ less than one, detected
Cobalt	7.40 - 7.40	1 / 2	0.93	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Copper	-- - --	2 / 2	14.1	IR86-SD02-08B	18.7	0 / 2	0.75	NO	HQ less than one, detected
Iron	-- - --	2 / 2	7,150	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Lead	-- - --	2 / 2	50.6	IR86-SD02-08B	30.2	1 / 2	1.68	YES	(1) HQ above one, detected
Magnesium [3]	736 - 1,220	0 / 2	--	--	NSV	-- / --	NSV	NO	Macronutrient
Manganese	-- - --	2 / 2	20.5	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Mercury	0.15 - 0.23	0 / 2	--	--	0.13	-- / --	1.77	YES	(2) Not detected, HQ above one
Nickel	5.90 - 9.70	0 / 2	--	--	15.9	-- / --	0.61	NO	HQ less than one, not detected
Potassium [3]	-- - --	2 / 2	292	IR86-SD02-08B	NSV	-- / --	NSV	NO	Macronutrient
Selenium	5.20 - 8.50	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Silver	1.50 - 2.40	0 / 2	--	--	0.73	-- / --	3.27	YES	(2) Not detected, HQ above one
Sodium [3]	736 - 1,220	0 / 2	--	--	NSV	-- / --	NSV	NO	Macronutrient
Thallium	3.70 - 6.10	0 / 2	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Vanadium	-- - --	2 / 2	24.3	IR86-SD02-08B	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Zinc	-- - --	2 / 2	129	IR86-SD02-08B	124	1 / 2	1.04	YES	(1) HQ above one, detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Count of detected samples exceeding or equaling Screening Value
[2] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:
Category 1 – Contaminants with a maximum detection exceeding the ESV
Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV
Category 3 – Detected contaminants with no ESV
Category 4 – Undetected contaminants with no ESV
[3] - Macronutrient - Not considered to be a COPC

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

Generated By: S.Kent/ATL
Checked By: J.Weier/ATL

TABLE I-9
Site 86 Sediment (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Volatile Organic Compounds (µg/kg)									
1,1,1-Trichloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2,2-Tetrachloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1,2-Trichloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,1-Dichloroethene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2,4-Trichlorobenzene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromo-3-chloropropane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dibromoethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichlorobenzene	6.30 - 15.0	2 / 8	5.90	IR86-SD106-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
1,2-Dichloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,2-Dichloropropane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
1,3-Dichlorobenzene	6.30 - 16.0	1 / 8	2.70	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
1,4-Dichlorobenzene	6.30 - 16.0	1 / 8	2.60	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
2-Butanone	13.0 - 13.0	0 / 1	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Hexanone	13.0 - 33.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Methyl-2-pentanone	13.0 - 33.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Acetone	25.0 - 65.0	2 / 8	50.0	IR86-SD110-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Benzene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromodichloromethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromoform	13.0 - 33.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Bromomethane	13.0 - 33.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon disulfide	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbon tetrachloride	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chlorobenzene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloroform	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Chloromethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
cis-1,2-Dichloroethene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
cis-1,3-Dichloropropene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Cyclohexane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dibromochloromethane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dichlorodifluoromethane (Freon-12)	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Ethylbenzene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Isopropylbenzene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methyl acetate	6.30 - 16.0	0 / 7	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methylcyclohexane	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-9
Site 86 Sediment (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Methylene chloride	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Methyl-tert-butyl ether (MTBE)	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Styrene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Tetrachloroethene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Toluene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
trans-1,2-Dichloroethene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
trans-1,3-Dichloropropene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Trichloroethene	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Trichlorofluoromethane (Freon-11)	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Vinyl chloride	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Xylene, total	6.30 - 16.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Semivolatile Organic Compounds (µg/kg)									
1,1-Biphenyl	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,2'-Oxybis(1-chloropropane)	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,5-Trichlorophenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4,6-Trichlorophenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dichlorophenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dimethylphenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dinitrophenol	380 - 3,600	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,4-Dinitrotoluene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2,6-Dinitrotoluene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chloronaphthalene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Chlorophenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Methylnaphthalene	290 - 2,700	0 / 8	--	--	23.2	-- / --	116	YES	(2) Not detected, HQ above one
2-Methylphenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitroaniline	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
2-Nitrophenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3- and 4-Methylphenol	77.0 - 730	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3,3'-Dichlorobenzidine	290 - 2,700	0 / 7	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
3-Nitroaniline	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4,6-Dinitro-2-methylphenol	450 - 4,200	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Bromophenyl-phenylether	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chloro-3-methylphenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chloroaniline	290 - 2,700	0 / 6	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Chlorophenyl-phenylether	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Nitroaniline	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
4-Nitrophenol	340 - 3,300	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-9
Site 86 Sediment (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Acenaphthene	3.80 - 530	0 / 7	--	--	6.71	-- / --	79.0	YES	(2) Not detected, HQ above one
Acenaphthylene	3.80 - 72.0	2 / 7	230	IR86-SD108-0-0_5-09D	5.87	2 / 7	39.2	YES	(1) HQ above one, detected
Acetophenone	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Anthracene	-- - --	8 / 8	1,200	IR86-SD108-0-0_5-09D	46.9	5 / 8	25.6	YES	(1) HQ above one, detected
Atrazine	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzaldehyde	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Benzo(a)anthracene	-- - --	8 / 8	4,700	IR86-SD108-0-0_5-09D	74.8	7 / 8	62.8	YES	(1) HQ above one, detected
Benzo(a)pyrene	-- - --	8 / 8	6,200	IR86-SD108-0-0_5-09D	88.8	7 / 8	69.8	YES	(1) HQ above one, detected
Benzo(b)fluoranthene	-- - --	8 / 8	12,000	IR86-SD108-0-0_5-09D	655	5 / 8	18.3	YES	(1) HQ above one, detected
Benzo(g,h,i)perylene	-- - --	8 / 8	6,600	IR86-SD108-0-0_5-09D	655	4 / 8	10.1	YES	(1) HQ above one, detected
Benzo(k)fluoranthene	-- - --	8 / 8	4,000	IR86-SD108-0-0_5-09D	655	2 / 8	6.11	YES	(1) HQ above one, detected
bis(2-Chloroethoxy)methane	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Chloroethyl)ether	38.0 - 360	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
bis(2-Ethylhexyl)phthalate	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Butylbenzylphthalate	290 - 2,700	2 / 8	280	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Caprolactam	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Carbazole	290 - 2,700	4 / 8	980	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Chrysene	-- - --	8 / 8	7,000	IR86-SD108-0-0_5-09D	108	7 / 8	64.8	YES	(1) HQ above one, detected
Dibenz(a,h)anthracene	62.0 - 530	3 / 7	100	IR86-SD112-0-0_5-09D	6.22	3 / 7	16.1	YES	(1) HQ above one, detected
Dibenzofuran	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Diethylphthalate	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dimethyl phthalate	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Di-n-butylphthalate	740 - 2,700	2 / 8	230	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Di-n-octylphthalate	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Fluoranthene	-- - --	8 / 8	14,000	IR86-SD108-0-0_5-09D	113	7 / 8	124	YES	(1) HQ above one, detected
Fluorene	24.0 - 530	2 / 7	10.0	IR86-SD112-0-0_5-09D	21.2	0 / 7	0.47	NO	HQ less than one, detected
Hexachlorobenzene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorobutadiene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachlorocyclopentadiene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Hexachloroethane	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Indeno(1,2,3-cd)pyrene	-- - --	8 / 8	5,700	IR86-SD108-0-0_5-09D	655	4 / 8	8.70	YES	(1) HQ above one, detected
Isophorone	210 - 2,000	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Naphthalene	24.0 - 530	2 / 7	6.80	IR86-SD112-0-0_5-09D	34.6	0 / 7	0.20	NO	HQ less than one, detected
n-Nitroso-di-n-propylamine	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
n-Nitrosodiphenylamine	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Nitrobenzene	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Pentachlorophenol	480 - 4,600	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value

TABLE I-9
Site 86 Sediment (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Phenanthrene	-- - --	8 / 8	3,600	IR86-SD108-0-0_5-09D	86.7	5 / 8	41.5	YES	(1) HQ above one, detected
Phenol	290 - 2,700	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Pyrene	-- - --	8 / 8	8,100	IR86-SD108-0-0_5-09D	153	7 / 8	52.9	YES	(1) HQ above one, detected
Pesticide/Polychlorinated Biphenyls (µg/kg)									
4,4'-DDD	7.00 - 120	1 / 8	0.40	IR86-SD107-0-0_5-09D	1.22	0 / 8	0.33	NO	HQ less than one, detected
4,4'-DDE	7.00 - 120	2 / 8	6.80	IR86-SD110-10A	2.07	1 / 8	3.29	YES	(1) HQ above one, detected
4,4'-DDT	7.00 - 120	4 / 8	17.0	IR86-SD110-10A	1.19	4 / 8	14.3	YES	(1) HQ above one, detected
Aldrin	1.90 - 60.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
alpha-BHC	1.90 - 60.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
alpha-Chlordane	1.90 - 60.0	0 / 8	--	--	0.50	-- / --	120	YES	(2) Not detected, HQ above one
Aroclor-1016	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
Aroclor-1221	79.0 - 190	0 / 8	--	--	21.6	-- / --	8.80	YES	(2) Not detected, HQ above one
Aroclor-1232	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
Aroclor-1242	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
Aroclor-1248	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
Aroclor-1254	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
Aroclor-1260	39.0 - 94.0	0 / 8	--	--	21.6	-- / --	4.35	YES	(2) Not detected, HQ above one
beta-BHC	1.90 - 60.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
delta-BHC	1.90 - 60.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Dieldrin	3.70 - 120	0 / 8	--	--	0.020	-- / --	6,000	YES	(2) Not detected, HQ above one
Endosulfan I	1.90 - 60.0	1 / 8	4.60	IR86-SD105-10A	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Endosulfan II	3.70 - 120	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endosulfan sulfate	3.70 - 120	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Endrin	3.70 - 120	0 / 8	--	--	0.020	-- / --	6,000	YES	(2) Not detected, HQ above one
Endrin aldehyde	3.70 - 66.0	3 / 8	22.0	IR86-SD108-10A	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Endrin ketone	3.70 - 120	4 / 8	67.0	IR86-SD108-10A	NSV	-- / --	NSV	YES	(3) Detected, no screening value
gamma-BHC (Lindane)	1.90 - 60.0	0 / 8	--	--	0.32	-- / --	188	YES	(2) Not detected, HQ above one
gamma-Chlordane	3.60 - 60.0	1 / 8	0.70	IR86-SD107-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Heptachlor	1.90 - 60.0	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Heptachlor epoxide	1.90 - 60.0	1 / 8	3.40	IR86-SD113-10A	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Methoxychlor	19.0 - 600	0 / 8	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Toxaphene	34.0 - 34.0	0 / 1	--	--	NSV	-- / --	NSV	YES	(4) Not detected, no screening value
Inorganics (mg/kg)									
Aluminum	-- - --	8 / 8	17,000	IR86-SD109-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Antimony	-- - --	8 / 8	5.90	IR86-SD108-0-0_5-09D	2.00	1 / 8	2.95	YES	(1) HQ above one, detected
Arsenic	0.80 - 0.80	7 / 8	9.70	IR86-SD112-0-0_5-09D	7.24	1 / 8	1.34	YES	(1) HQ above one, detected
Barium	-- - --	8 / 8	78.0	IR86-SD112-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value

TABLE I-9
Site 86 Sediment (Drainage Ditch) Screen - Step 2
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Step 2 COPC?	Rationale[2]
Beryllium	-- - --	8 / 8	1.20	IR86-SD112-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Cadmium	-- - --	8 / 8	8.20	IR86-SD110-0-0_5-09D	0.68	8 / 8	12.1	YES	(1) HQ above one, detected
Calcium [3]	-- - --	8 / 8	35,000	IR86-SD106-0-0_5-09D	NSV	-- / --	NSV	NO	Macronutrient
Chromium	-- - --	8 / 8	36.0	IR86-SD112-0-0_5-09D	52.3	0 / 8	0.69	NO	HQ less than one, detected
Cobalt	-- - --	8 / 8	7.90	IR86-SD110-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Copper	-- - --	8 / 8	35.0	IR86-SD110-0-0_5-09D	18.7	3 / 8	1.87	YES	(1) HQ above one, detected
Iron	-- - --	8 / 8	30,000	IR86-SD112-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Lead	-- - --	8 / 8	66.0	IR86-SD108-0-0_5-09D	30.2	3 / 8	2.19	YES	(1) HQ above one, detected
Magnesium [3]	-- - --	8 / 8	2,600	IR86-SD106-0-0_5-09D	NSV	-- / --	NSV	NO	Macronutrient
Manganese	-- - --	8 / 8	110	IR86-SD105-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Mercury	-- - --	8 / 8	0.11	IR86-SD110-0-0_5-09D	0.13	0 / 8	0.85	NO	HQ less than one, detected
Nickel	-- - --	8 / 8	19.0	IR86-SD110-0-0_5-09D	15.9	2 / 8	1.19	YES	(1) HQ above one, detected
Potassium [3]	-- - --	8 / 8	990	IR86-SD112-0-0_5-09D	NSV	-- / --	NSV	NO	Macronutrient
Selenium	0.60 - 1.20	4 / 8	28.0	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Silver	-- - --	8 / 8	1.50	IR86-SD112-0-0_5-09D	0.73	2 / 8	2.05	YES	(1) HQ above one, detected
Sodium [3]	300 - 700	0 / 8	--	--	NSV	-- / --	NSV	NO	Macronutrient
Thallium	3.00 - 5.80	3 / 8	3.40	IR86-SD108-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Vanadium	-- - --	8 / 8	52.0	IR86-SD112-0-0_5-09D	NSV	-- / --	NSV	YES	(3) Detected, no screening value
Zinc	-- - --	8 / 8	190	IR86-SD110-0-0_5-09D	124	4 / 8	1.53	YES	(1) HQ above one, detected

Notes:

The categorized analytes were retained for quantitative refinement in the Step 3 table.

[1] - Count of detected samples exceeding or equaling Screening Value

[2] - Categories are assigned to those analytes retained as Step 2 COPCs and are as follows:

Category 1 – Contaminants with a maximum detection exceeding the ESV

Category 2– Undetected contaminants with a laboratory sample quantitation limit (SQL) exceeding the ESV

Category 3 – Detected contaminants with no ESV

Category 4 – Undetected contaminants with no ESV

[3] - Macronutrient - Not considered to be a COPC

µg/kg - Micrograms per kilogram

COPC - Contaminant of potential concern

HQ - Hazard quotient

mg/kg - Milligrams per kilogram

NSV - No screening value

Generated by: S.Kent/ATL

Checked by: K.Taylor/DFW

TABLE I-10
Site 86 Surface Soil Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazardous Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/kg)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2,4-Trichlorobenzene	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
1,2-Dibromo-3-chloropropane	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromoethane	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
1,3-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
1,4-Dichlorobenzene	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
2-Butanone	9.90 - 21.0	2 / 23	20.0	IR86-SS111-0-0_5-09D	15.8	95% KM (t) UCL	NSV	--	--	-- / --	NSV	NO	Lab contaminant, low frequency of exceedance
2-Hexanone	9.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Methyl-2-pentanone	9.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetone	12.0 - 37.0	6 / 23	230	IR86-SS113-0-0_5-09D	50.0	95% KM (t) UCL	NSV	--	--	-- / --	NSV	NO	Lab contaminant, low frequency of exceedance
Bromodichloromethane	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Bromoform	9.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Bromomethane	9.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbon disulfide	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chloroform	4.90 - 21.0	0 / 23	--	--	--	--	1.00	--	--	-- / --	--	NO	Not detected
Chloromethane	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
cis-1,2-Dichloroethene	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
cis-1,3-Dichloropropene	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibromochloromethane	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dichlorodifluoromethane (Freon-12)	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Isopropylbenzene	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methyl acetate	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methylcyclohexane	4.90 - 21.0	1 / 23	7.40	IR86-SS107-0-0_5-09D	7.40	Maximum Result	NSV			-- / --	NSV	NO	Uncertainty, no screening value
Methyl-tert-butyl ether (MTBE)	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Tetrachloroethene	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
Toluene	4.90 - 21.0	2 / 23	53.0	IR86-SS107-0-0_5-09D	24.70	97.5% KM (Chebyshev) UCL	50.0	--	--	1 / 23	0.49	NO	EPC HQ less than one
trans-1,3-Dichloropropene	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Trichloroethene	4.90 - 21.0	0 / 23	--	--	--	--	1.00	--	--	-- / --	--	NO	Not detected
Trichlorofluoromethane (Freon-11)	4.90 - 21.0	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Vinyl chloride	4.90 - 21.0	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
Semivolatile Organic Compounds (µg/kg)													
2,2'-Oxybis(1-chloropropane)	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4-Dichlorophenol	270 - 400	0 / 23	--	--	--	--	3.00	--	--	-- / --	--	NO	Not detected
2,4-Dimethylphenol	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4-Dinitrotoluene	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,6-Dinitrotoluene	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Chlorophenol	270 - 400	0 / 23	--	--	--	--	10.0	--	--	-- / --	--	NO	Not detected
2-Nitroaniline	270 - 1,000	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Nitrophenol	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3,3'-Dichlorobenzidine	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3-Nitroaniline	270 - 1,000	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4,6-Dinitro-2-methylphenol	430 - 1,000	0 / 22	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Bromophenyl-phenylether	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chloro-3-methylphenol	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chlorophenyl-phenylether	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Nitroaniline	270 - 1,000	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected

TABLE I-10
Site 86 Surface Soil Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazardous Quotient	Step 3A COPC?	Rationale
Acetophenone	270 - 400	1 / 20	87.0	IR86-SS02-07D	87	Maximum Result	NSV	300,000	Buchman, 2008	-- / --	0.00029	NO	EPC HQ less than one based on supplemental screening value
Atrazine	270 - 400	0 / 23	--	--	--	--	0.050	--	--	-- / --	--	NO	Not detected
Benzaldehyde	270 - 400	1 / 23	30.0	IR86-SS113-0-0_5-09D	30	Maximum Result	NSV			-- / --	NSV	NO	Uncertainty, no screening value
bis(2-Chloroethoxy)methane	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Chloroethyl)ether	36.0 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Ethylhexyl)phthalate	270 - 390	5 / 23	290	IR86-SS04-07D	198	95% KM (t) UCL	100	--	--	4 / 23	1.98	NO	Lab contaminant
Butylbenzylphthalate	270 - 400	4 / 23	240	IR86-SS04-07D	240	95% KM (t) UCL	100	--	--	2 / 23	2.40	NO	Lab contaminant, low frequency of exceedance
Caprolactam	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbazole	270 - 400	2 / 23	46.0	IR86-SS114-0-0_5-09D	46	95% KM (t) UCL	NSV			-- / --	NSV	NO	Uncertainty, no screening value
Dibenzofuran	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Di-n-octylphthalate	270 - 400	0 / 23	--	--	--	--	100	--	--	-- / --	--	NO	Not detected
Hexachlorobenzene	270 - 400	0 / 23	--	--	--	--	2.50	--	--	-- / --	--	NO	Not detected
Hexachlorobutadiene	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachloroethane	270 - 400	0 / 23	--	--	--	--	100	--	--	-- / --	--	NO	Not detected
Isophorone	200 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
n-Nitroso-di-n-propylamine	270 - 400	0 / 23	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Phenol	270 - 400	0 / 23	--	--	--	--	50.0	--	--	-- / --	--	NO	Not detected
Pesticide/Polychlorinated Biphenyls (µg/kg)													
Aldrin	1.80 - 2.50	0 / 23	--	--	--	--	2.50	--	--	-- / --	--	NO	Not detected
alpha-BHC	1.80 - 2.50	0 / 23	--	--	--	--	2.50	--	--	-- / --	--	NO	Not detected
Aroclor-1016	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1221	73.0 - 98.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1232	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1242	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1248	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1254	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
Aroclor-1260	36.0 - 48.0	0 / 23	--	--	--	--	20.0	--	--	-- / --	--	NO	Not detected
beta-BHC	1.80 - 2.50	1 / 23	28.0	IR86-SS105-0-0_5-09D	7.30	95% Chebyshev UCL[2]	1.00	--	--	1 / 23	7.3	NO	Low frequency of exceedance (less than 5%)
Dieldrin	3.60 - 4.80	5 / 23	5.70	IR86-SS104-0-0_5-09D	1.47	95% KM (t) UCL	4.90	--	--	1 / 23	0.3	NO	EPC HQ less than one
Endrin	3.60 - 4.80	1 / 23	1.20	IR86-SS01-07D	1.20	Maximum Result	1.00	--	--	1 / 23	1.2	NO	Low magnitude and frequency of exceedance (less than 5%)
gamma-BHC (Lindane)	1.80 - 2.50	1 / 23	0.79	IR86-SS04-07D	0.79	Maximum Result	0.050	--	--	1 / 23	15.8	NO	Low frequency of exceedance (less than 5%)
Toxaphene	33.0 - 200	0 / 23	--	--	--	--	100	--	--	-- / --	--	NO	Not detected
Inorganics (mg/kg)													
Aluminum	-- - --	23 / 23	15,000	IR86-SS112-0-0_5-09D	7,490	95% Approximate Gamma UCL	50.0	--	--	23 / 23	150	NO	Within range of background
Cadmium	0.55 - 0.56	21 / 23	1.80	IR86-SS114-0-0_5-09D	0.849	95% KM (Chebyshev) UCL	0.36	--	--	10 / 23	2.4	NO	Low magnitude of exceedance. No food chain effects
Cyanide	2.70 - 2.80	8 / 10	0.50	IR86-SS10-07D	0.381	95% KM (t) UCL	NSV	1.3	Buchman, 2008	-- / --	0.3	NO	EPC HQ is 1.0 based on supplemental screening value
Iron	-- - --	23 / 23	4,500	IR86-SS105-0-0_5-09D	3,350	95% Student's-t UCL	200	--	--	23 / 23	16.8	NO	Within range of background
Lead	-- - --	23 / 23	99.9	IR86-SS07-07D	64.50	99% Chebyshev (Mean, Sd) UCL	11.0	50	EPA, 2001	15 / 23	1.3	NO	Low magnitude and frequency of exceedance based on supplemental screening value. No food chain effects
Selenium	0.60 - 4.20	10 / 23	1.10	IR86-SS100-09D	0.522	95% KM (t) UCL	0.52	--	--	2 / 23	1.0	NO	EPC HQ is 1.0
Vanadium	-- - --	23 / 23	22.5	IR86-SS07-07D	14.8	95% Student's-t UCL	7.80	--	--	20 / 23	1.9	NO	Within range of background
Zinc	-- - --	23 / 23	92.0	IR86-SS114-0-0_5-09D	29.6	95% Approximate Gamma UCL	46.0	--	--	2 / 23	0.6	NO	EPC HQ less than one

Notes:

[1] - Count of detected samples exceeding or equaling Screening Value

[2] - ProUCL Version 4 does not offer a calculated UCL when there are too few unique detected results (one or sometimes more than one). In these instances, a 95% Chebyshev UCL using a proxy value of 1/2 the detection limit for NDs is calculated.

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

95% KM (t) UCL - UCL based upon Kaplan-Meier estimates using the Student's t-distribution cutoff value
97.5% KM (Chebyshev) UCL - UCL based upon Kaplan-Meier estimates using the Chebyshev inequality
95% Chebyshev UCL - UCL based upon UCL based on Chebyshev inequality
95% Approximate Gamma UCL - UCL based upon gamma distribution using chi-square approximation
95% KM (Chebyshev) UCL - UCL based upon Kaplan-Meier estimates using the Chebyshev inequality
95% Student's-t UCL - UCL based upon Student's-t distribution
99% Chebyshev (Mean, Sd) UCL - UCL based on Chebyshev inequality (using sample mean and sample standard deviation),

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-11
Site 86 Subsurface Soil Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Frequency of Exceedance[1]	EPC Hazardous Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/kg)											
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
1,2-Dibromo-3-chloropropane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
1,2-Dibromoethane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2-Butanone	9.20 - 14.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2-Hexanone	9.20 - 14.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4-Methyl-2-pentanone	9.20 - 14.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Acetone	18.0 - 28.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Bromodichloromethane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Bromoform	9.20 - 14.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Bromomethane	9.20 - 14.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Carbon disulfide	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Chloroform	4.60 - 7.00	0 / 2	--	--	--	--	1.00	-- / --	--	NO	Not detected
Chloromethane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
cis-1,2-Dichloroethene	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
cis-1,3-Dichloropropene	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Dibromochloromethane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Dichlorodifluoromethane (Freon-12)	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Isopropylbenzene	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Methyl acetate	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Methylcyclohexane	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Methyl-tert-butyl ether (MTBE)	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
trans-1,3-Dichloropropene	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Trichloroethene	4.60 - 7.00	0 / 2	--	--	--	--	1.00	-- / --	--	NO	Not detected
Trichlorofluoromethane (Freon-11)	4.60 - 7.00	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Semivolatile Organic Compounds (µg/kg)											
2,2'-Oxybis(1-chloropropane)	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2,4-Dichlorophenol	290 - 290	0 / 2	--	--	--	--	3.00	-- / --	--	NO	Not detected
2,4-Dimethylphenol	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2,4-Dinitrotoluene	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2,6-Dinitrotoluene	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2-Chlorophenol	290 - 290	0 / 2	--	--	--	--	10.0	-- / --	--	NO	Not detected
2-Nitroaniline	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
2-Nitrophenol	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
3,3'-Dichlorobenzidine	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
3-Nitroaniline	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4,6-Dinitro-2-methylphenol	460 - 460	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4-Bromophenyl-phenylether	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4-Chloro-3-methylphenol	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4-Chlorophenyl-phenylether	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
4-Nitroaniline	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Acetophenone	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Atrazine	290 - 290	0 / 2	--	--	--	--	0.050	-- / --	--	NO	Not detected

TABLE I-11
Site 86 Subsurface Soil Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Frequency of Exceedance[1]	EPC Hazardous Quotient	Step 3A COPC?	Rationale
Benzaldehyde	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
bis(2-Chloroethoxy)methane	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
bis(2-Chloroethyl)ether	39.0 - 39.0	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
bis(2-Ethylhexyl)phthalate	290 - 290	0 / 2	--	--	--	--	100	-- / --	--	NO	Not detected
Butylbenzylphthalate	290 - 290	0 / 2	--	--	--	--	100	-- / --	--	NO	Not detected
Caprolactam	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Carbazole	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Dibenzofuran	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Di-n-octylphthalate	290 - 290	0 / 2	--	--	--	--	100	-- / --	--	NO	Not detected
Hexachlorobenzene	290 - 290	0 / 2	--	--	--	--	2.50	-- / --	--	NO	Not detected
Hexachlorobutadiene	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Hexachloroethane	290 - 290	0 / 2	--	--	--	--	100	-- / --	--	NO	Not detected
Isophorone	210 - 210	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
n-Nitroso-di-n-propylamine	290 - 290	0 / 2	--	--	--	--	NSV	-- / --	--	NO	Not detected
Phenol	290 - 290	0 / 2	--	--	--	--	50.0	-- / --	--	NO	Not detected
Pesticide/Polychlorinated Biphenyls (µg/kg)											
Aroclor-1016	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1221	77.0 - 79.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1232	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1242	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1248	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1254	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
Aroclor-1260	38.0 - 39.0	0 / 2	--	--	--	--	20.0	-- / --	--	NO	Not detected
beta-BHC	2.00 - 2.00	0 / 2	--	--	--	--	1.00	-- / --	--	NO	Not detected
Endrin	3.80 - 3.90	0 / 2	--	--	--	--	1.00	-- / --	--	NO	Not detected
gamma-BHC (Lindane)	2.00 - 2.00	0 / 2	--	--	--	--	0.050	-- / --	--	NO	Not detected
Inorganics (mg/kg)											
Aluminum	-- - --	2 / 2	14,000	IR86-SB113-02-03-09D	14,000	Maximum result	50.0	2 / 2	280	NO	Within range of background
Selenium	0.59 - 0.60	0 / 2	--	--	--	--	0.52	-- / --	--	NO	Not detected
Thallium	2.90 - 3.00	0 / 2	--	--	--	--	1.00	-- / --	--	NO	Not detected
Vanadium	-- - --	2 / 2	20.0	IR86-SB113-02-03-09D	20.0	Maximum result	7.80	2 / 2	3	NO	Within range of background

Notes:

[1] - Count of detected samples exceeding or equaling Screening Value

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-12
Site 86 Surface Water (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,1-Dichloroethane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2,3-Trichlorobenzene	0.50 - 0.50	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromo-3-chloropropane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromoethane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dichlorobenzene	0.50 - 10.0	0 / 5	--	--	--	--	15.8	--	--	-- / --	--	NO	Not detected
2-Butanone	5.00 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Hexanone	5.00 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Methyl-2-pentanone	5.00 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetone	6.20 - 18.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Bromochloromethane	0.50 - 0.50	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Bromodichloromethane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbon disulfide	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chloroethane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
cis-1,2-Dichloroethene	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Cyclohexane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibromochloromethane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dichlorodifluoromethane (Freon-12)	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Isopropylbenzene	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
m- and p-Xylene	0.50 - 0.50	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methyl acetate	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methylcyclohexane	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methyl-tert-butyl ether (MTBE)	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
o-Xylene	0.50 - 0.50	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Styrene	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Trichloroethene	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Trichlorofluoromethane (Freon-11)	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Vinyl chloride	0.50 - 10.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Xylene, total	10.0 - 10.0	0 / 3	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Semivolatile Organic Compounds (µg/L)													
1,1-Biphenyl	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,2'-Oxybis(1-chloropropane)	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,3,4,6-Tetrachlorophenol	5.40 - 5.90	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,5-Trichlorophenol	5.40 - 26.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,6-Trichlorophenol	5.40 - 11.0	0 / 5	--	--	--	--	3.20	--	--	-- / --	--	NO	Not detected
2,4-Dinitrophenol	11.0 - 26.0	0 / 5	--	--	--	--	6.20	--	--	-- / --	--	NO	Not detected
2,4-Dinitrotoluene	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,6-Dinitrotoluene	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Chloronaphthalene	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylnaphthalene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylphenol	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Nitroaniline	11.0 - 26.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3,3'-Dichlorobenzidine	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3-Nitroaniline	11.0 - 26.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4,6-Dinitro-2-methylphenol	11.0 - 26.0	0 / 5	--	--	--	--	2.30	--	--	-- / --	--	NO	Not detected
4-Chloro-3-methylphenol	5.40 - 11.0	0 / 5	--	--	--	--	0.30	--	--	-- / --	--	NO	Not detected
4-Chloroaniline	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chlorophenyl-phenylether	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Methylphenol	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected

TABLE I-12
Site 86 Surface Water (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
4-Nitroaniline	11.0 - 26.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acenaphthene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acenaphthylene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetophenone	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Anthracene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Atrazine	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzaldehyde	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(a)anthracene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(a)pyrene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(b)fluoranthene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(g,h,i)perylene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(k)fluoranthene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Chloroethoxy)methane	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Ethylhexyl)phthalate	5.40 - 11.0	0 / 5	--	--	--	--	0.30	--	--	-- / --	--	NO	Not detected
Caprolactam	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbazole	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chrysene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibenz(a,h)anthracene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibenzofuran	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Di-n-butylphthalate	5.40 - 11.0	0 / 5	--	--	--	--	9.40	--	--	-- / --	--	NO	Not detected
Di-n-octylphthalate	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Fluoranthene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Fluorene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachlorobenzene	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachlorobutadiene	5.40 - 11.0	0 / 5	--	--	--	--	0.93	--	--	-- / --	--	NO	Not detected
Hexachlorocyclopentadiene	5.40 - 11.0	0 / 5	--	--	--	--	0.070	--	--	-- / --	--	NO	Not detected
Hexachloroethane	5.40 - 11.0	0 / 5	--	--	--	--	9.80	--	--	-- / --	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Naphthalene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
n-Nitroso-di-n-propylamine	5.40 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Pentachlorophenol	0.22 - 26.0	0 / 5	--	--	--	--	15.0	--	--	-- / --	--	NO	Not detected
Phenanthrene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Pyrene	0.11 - 11.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Pesticide/Polychlorinated Biphenyls (µg/L)													
4,4'-DDD	0.10 - 0.11	0 / 5	--	--	--	--	0.0064	--	--	-- / --	--	NO	Not detected
4,4'-DDT	0.10 - 0.11	0 / 5	--	--	--	--	0.0010	--	--	-- / --	--	NO	Not detected
alpha-Chlordane	0.050 - 0.056	0 / 5	--	--	--	--	0.0043	--	--	-- / --	--	NO	Not detected
Aroclor-1016	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1221	1.00 - 2.00	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1232	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1242	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1248	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1254	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1260	1.00 - 1.10	0 / 5	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1262	1.00 - 1.10	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Aroclor-1268	1.00 - 1.10	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
delta-BHC	0.050 - 0.056	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dieldrin	0.10 - 0.11	0 / 5	--	--	--	--	0.056	--	--	-- / --	--	NO	Not detected
Endosulfan I	0.050 - 0.056	0 / 5	--	--	--	--	0.056	--	--	-- / --	--	NO	Not detected

TABLE I-12
Site 86 Surface Water (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Endosulfan II	0.10 - 0.11	0 / 5	--	--	--	--	0.056	--	--	-- / --	--	NO	Not detected
Endosulfan sulfate	0.10 - 0.11	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin	0.10 - 0.11	0 / 5	--	--	--	--	0.036	--	--	-- / --	--	NO	Not detected
Endrin aldehyde	0.10 - 0.11	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin ketone	0.10 - 0.11	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
gamma-Chlordane	0.023 - 0.051	0 / 5	--	--	--	--	0.0043	--	--	-- / --	--	NO	Not detected
Heptachlor	0.050 - 0.056	0 / 5	--	--	--	--	0.053	--	--	-- / --	--	NO	Not detected
Heptachlor epoxide	0.017 - 0.056	0 / 5	--	--	--	--	0.0038	--	--	-- / --	--	NO	Not detected
Methoxychlor	0.50 - 0.56	0 / 5	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Toxaphene	5.00 - 5.60	0 / 5	--	--	--	--	0.0020	--	--	-- / --	--	NO	Not detected
Inorganics (µg/L)													
Aluminum	200 - 200	3 / 5	151	IR86-SW02-07D	151	Maximum result	87.0	--	--	3 / 5	1.74	NO	Low magnitude of exceedance. Within range of background in SS (see text for discussion).
Barium	-- - --	5 / 5	9.20	IR86-SW01-08B	8.80	95% Student's-t UCL	NSV	16,000	TCEQ, 2006	-- / --	5.50E-04	NO	EPC HQ less than one, based on supplemental screening value
Beryllium	5.00 - 5.00	0 / 5	--	--	--	--	0.53	--	--	-- / --	--	NO	Not detected
Cadmium	5.00 - 5.00	0 / 5	--	--	--	--	0.25	--	--	-- / --	--	NO	Not detected
Cobalt	50.0 - 50.0	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Copper	25.0 - 25.0	0 / 5	--	--	--	--	9.00	--	--	-- / --	--	NO	Not detected
Cyanide	10.0 - 10.0	0 / 3	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Manganese	15.0 - 21.6	3 / 5	5.10	IR86-SW02-07D	5.10	Maximum result	NSV	120	TCEQ, 2006	-- / --	0.04	NO	EPC HQ less than one, based on supplemental screening value
Selenium	35.0 - 35.0	0 / 5	--	--	--	--	5.00	--	--	-- / --	--	NO	Not detected
Silver	10.0 - 10.0	0 / 5	--	--	--	--	0.012	--	--	-- / --	--	NO	Not detected
Thallium	25.0 - 25.0	0 / 5	--	--	--	--	4.00	--	--	-- / --	--	NO	Not detected
Vanadium	-- - --	5 / 5	2.30	IR86-SW02-08B	1.73	95% Student's-t UCL	NSV	20	TCEQ, 2006	-- / --	0.09	NO	EPC HQ less than one, based on supplemental screening value

Notes:

[1] - Fresh water screening values
[2] - Count of detected samples exceeding or equaling Screening Value

µg/L - Micrograms per liter
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/L - Milligrams per liter
NSV - No screening value

95% Student's-t UCL - UCL based upon Student's-t distribution

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-13
Site 86 Surface Water (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,1-Dichloroethane	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromo-3-chloropropane	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromoethane	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Butanone	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Hexanone	5.00 - 5.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Methyl-2-pentanone	5.00 - 5.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetone	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Bromodichloromethane	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbon disulfide	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chloroethane	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
cis-1,2-Dichloroethene	1.00 - 1.00	2 / 6	0.13	IR86-SW113-09D	0.13	Maximum result	NSV	14,000	TCEQ, 2006	-- / --	9.29E-06	NO	EPC HQ less than one based on supplemental screening value
Cyclohexane	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibromochloromethane	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Isopropylbenzene	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methyl acetate	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methylcyclohexane	5.00 - 5.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Styrene	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Trichloroethene	0.50 - 0.50	2 / 6	0.19	IR86-SW113-09D	0.19	Maximum result	NSV	550	TCEQ, 2006	-- / --	3.45E-04	NO	EPC HQ less than one based on supplemental screening value
Trichlorofluoromethane (Freon-11)	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Vinyl chloride	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Xylene, total	0.50 - 0.50	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Semivolatile Organic Compounds (µg/L)													
1,1-Biphenyl	5.10 - 5.20	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,2'-Oxybis(1-chloropropane)	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,5-Trichlorophenol	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,6-Trichlorophenol	5.10 - 5.20	0 / 6	--	--	--	--	3.20	--	--	-- / --	--	NO	Not detected
2,4-Dinitrotoluene	2.00 - 2.10	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,6-Dinitrotoluene	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Chloronaphthalene	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylnaphthalene	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylphenol	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Nitroaniline	2.00 - 2.10	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3- and 4-Methylphenol	2.00 - 2.10	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3,3'-Dichlorobenzidine	5.10 - 5.20	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3-Nitroaniline	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4,6-Dinitro-2-methylphenol	10.0 - 10.0	0 / 6	--	--	--	--	2.30	--	--	-- / --	--	NO	Not detected
4-Chloro-3-methylphenol	1.00 - 1.00	0 / 6	--	--	--	--	0.30	--	--	-- / --	--	NO	Not detected
4-Chloroaniline	5.10 - 5.20	0 / 5	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chlorophenyl-phenylether	5.10 - 5.20	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Nitroaniline	2.00 - 2.10	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acenaphthene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acenaphthylene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetophenone	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Anthracene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Atrazine	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzaldehyde	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(a)anthracene	0.20 - 0.21	3 / 6	0.15	IR86-SW110-09D	0.15	95% KM (t) UCL	NSV	34.6	TCEQ, 2006	-- / --	4.34E-03	NO	EPC HQ less than one based on supplemental screening value

TABLE I-13
Site 86 Surface Water (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Benzo(a)pyrene	0.20 - 0.21	1 / 6	0.034	IR86-SW110-09D	0.034	Maximum result	NSV	0.014	TCEQ, 2006	-- / --	2.43	NO	Low magnitude of exceedance based on supplemental screening value and maximum detect. No food chain effects.
Benzo(b)fluoranthene	0.20 - 0.21	2 / 6	0.083	IR86-SW110-09D	0.083	Maximum result	NSV	9.07	Buchman, 2008	-- / --	9.15E-03	NO	EPC HQ less than one based on supplemental screening value
Benzo(g,h,i)perylene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(k)fluoranthene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Chloroethoxy)methane	5.10 - 5.20	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Ethylhexyl)phthalate	5.10 - 5.20	0 / 6	--	--	--	--	0.30	--	--	-- / --	--	NO	Not detected
Caprolactam	10.0 - 10.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbazole	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chrysene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibenz(a,h)anthracene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibenzofuran	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Di-n-octylphthalate	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Fluoranthene	0.20 - 0.21	4 / 6	0.092	IR86-SW110-09D	0.077	95% KM (t) UCL	NSV	0.04	Buchman, 2008	-- / --	1.93	NO	Low magnitude of exceedance based on supplemental screening value and maximum detect. No food chain effects.
Fluorene	0.20 - 0.21	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachlorobenzene	1.00 - 1.00	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachlorobutadiene	1.00 - 1.00	0 / 6	--	--	--	--	0.93	--	--	-- / --	--	NO	Not detected
Hexachlorocyclopentadiene	10.0 - 10.0	0 / 6	--	--	--	--	0.070	--	--	-- / --	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	0.20 - 0.21	1 / 6	0.068	IR86-SW106-09D	0.068	Maximum result	NSV	4.31	Buchman, 2008	-- / --	1.58E-02	NO	EPC HQ less than one based on supplemental screening value
Naphthalene	0.20 - 0.21	1 / 6	0.19	IR86-SW105-09D	0.181	95% Chebyshev UCL[3]	NSV	250	TCEQ, 2006	-- / --	7.24E-04	NO	EPC HQ less than one based on supplemental screening value
n-Nitroso-di-n-propylamine	5.10 - 5.20	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Phenanthrene	0.20 - 0.21	2 / 6	0.037	IR86-SW110-09D	0.037	Maximum result	NSV	30	TCEQ, 2006	-- / --	1.23E-03	NO	EPC HQ less than one based on supplemental screening value
Pyrene	0.20 - 0.21	4 / 6	0.079	IR86-SW110-09D	0.067	95% KM (t) UCL	NSV	7	TCEQ, 2006	-- / --	0.01	NO	EPC HQ less than one based on supplemental screening value
Pesticide/Polychlorinated Biphenyls (µg/L)													
4,4'-DDD	0.026 - 0.026	0 / 6	--	--	--	--	0.0064	--	--	-- / --	--	NO	Not detected
4,4'-DDT	0.026 - 0.026	0 / 6	--	--	--	--	0.0010	--	--	-- / --	--	NO	Not detected
alpha-Chlordane	0.026 - 0.026	0 / 6	--	--	--	--	0.0043	--	--	-- / --	--	NO	Not detected
Aroclor-1016	0.26 - 0.26	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1221	0.51 - 0.53	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1232	0.61 - 0.63	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1242	0.51 - 0.53	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1248	0.51 - 0.53	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1254	0.51 - 0.53	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
Aroclor-1260	0.26 - 0.26	0 / 6	--	--	--	--	0.014	--	--	-- / --	--	NO	Not detected
delta-BHC	0.026 - 0.026	1 / 6	0.014	IR86-SW108-09D	0.014	95% Chebyshev UCL[3]	NSV	2.2	Buchman, 2008	-- / --	0.01	NO	EPC HQ less than one based on supplemental screening value
Endosulfan II	0.026 - 0.026	2 / 6	0.057	IR86-SW106-09D	0.0498	95% KM (t) UCL	0.056	--	--	1 / 6	0.89	NO	EPC HQ less than one
Endosulfan sulfate	0.026 - 0.026	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin aldehyde	0.026 - 0.026	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin ketone	0.026 - 0.026	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
gamma-Chlordane	0.026 - 0.026	0 / 6	--	--	--	--	0.0043	--	--	-- / --	--	NO	Not detected
Heptachlor epoxide	0.026 - 0.026	0 / 6	--	--	--	--	0.0038	--	--	-- / --	--	NO	Not detected
Methoxychlor	0.10 - 0.10	0 / 6	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Toxaphene	0.26 - 0.26	0 / 6	--	--	--	--	0.0020	--	--	-- / --	--	NO	Not detected
Inorganics (µg/L)													
Aluminum	200 - 200	4 / 6	3,800	IR86-SW110-09D	3,800	Maximum result	87.0	--	--	4 / 6	43.7	NO	Not detected in filtered sample
Barium	-- - --	6 / 6	67.0	IR86-SW110-09D	53.8	95% Approximate Gamma UCL	NSV	16,000	TCEQ, 2006	-- / --	3.36E-03	NO	EPC HQ less than one based on supplemental screening value
Beryllium	4.00 - 4.00	0 / 6	--	--	--	--	0.53	--	--	-- / --	--	NO	Not detected
Cadmium	2.00 - 2.00	1 / 6	2.10	IR86-SW110-09D	1.98	95% Chebyshev UCL[3]	0.25	--	--	1 / 6	7.92	NO	Not detected in filtered sample. No food chain effects.
Cobalt	25.0 - 25.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Copper	5.00 - 5.00	3 / 6	11.0	IR86-SW110-09D	11	95% KM (BCA) UCL	9.00	--	--	1 / 6	1.22	NO	Not detected in filtered sample. Low magnitude of exceedance.
Iron	-- - --	6 / 6	33,000	IR86-SW110-09D	33,000	Maximum result	1,000	--	--	4 / 6	33.0	NO	EPC HQ less than one in filtered sample
Manganese	-- - --	6 / 6	410	IR86-SW110-09D	374	95% Chebyshev (Mean, Sd) UCL	NSV	120	TCEQ, 2006	-- / --	3.12	NO	EPC HQ less than one in filtered sample

TABLE I-13
Site 86 Surface Water (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Selenium	10.0 - 10.0	0 / 6	--	--	--	--	5.00	--	--	-- / --	--	NO	Not detected
Silver	5.00 - 5.00	0 / 6	--	--	--	--	0.012	--	--	-- / --	--	NO	Not detected
Thallium	50.0 - 50.0	0 / 6	--	--	--	--	4.00	--	--	-- / --	--	NO	Not detected
Vanadium	50.0 - 50.0	1 / 6	22.0	IR86-SW110-09D	22.0	Maximum result	NSV	20	TCEQ, 2006	-- / --	1.1	NO	Low magnitude of exceedance based on supplemental screening value and maximum detect. No food chain effects. Not detected in the filtered sample.
Dissolved Metals (µg/L)													
Aluminum, Dissolved	500 - 500	0 / 6	--	--	--	--	87.0	--	--	-- / --	--	NO	Not detected
Barium, Dissolved	-- - --	6 / 6	24.0	IR86-SW105-09D	19.7	95% Student's-t UCL	NSV	16,000	TCEQ, 2006	-- / --	1.23E-03	NO	EPC HQ less than one based on supplemental screening value
Beryllium, Dissolved	4.00 - 4.00	0 / 6	--	--	--	--	0.53	--	--	-- / --	--	NO	Not detected
Cadmium, Dissolved	2.00 - 2.00	0 / 6	--	--	--	--	0.25	--	--	-- / --	--	NO	Not detected
Cobalt, Dissolved	25.0 - 25.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Manganese, Dissolved	-- - --	6 / 6	69.0	IR86-SW112-09D	64.1	95% Student's-t UCL	NSV	120	TCEQ, 2006	-- / --	0.53	NO	EPC HQ less than one based on supplemental screening value
Selenium, Dissolved	10.0 - 10.0	0 / 6	--	--	--	--	5.00	--	--	-- / --	--	NO	Not detected
Silver, Dissolved	5.00 - 5.00	0 / 6	--	--	--	--	0.012	--	--	-- / --	--	NO	Not detected
Thallium, Dissolved	50.0 - 50.0	0 / 6	--	--	--	--	4.00	--	--	-- / --	--	NO	Not detected
Vanadium, Dissolved	50.0 - 50.0	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected

Notes:

[1] - Fresh water screening values
[2] - Count of detected samples exceeding or equaling Screening Value
[3] - ProUCL Version 4 does not offer a calculated UCL when there are too few unique detected results (one or sometimes more than one). In these instances, a 95% Chebyshev UCL using a proxy value of 1/2 the detection limit for NDs is calculated.

µg/kg - Micrograms per liter
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/kg - Milligrams per liter
NSV - No screening value

95% Chebyshev UCL - UCL based upon UCL based on Chebyshev inequality
95% KM (t) UCL - UCL based upon Kaplan-Meier estimates using the Student's t-distribution cutoff value
95% Approximate Gamma UCL - UCL based upon gamma distribution using chi-square approximation
95% KM (BCA) UCL - UCL based upon Kaplan-Meier estimates using the corrected accelerated bootstrap method
95% Chebyshev (Mean, Sd) UCL - UCL based on Chebyshev inequality (using sample mean and sample standard deviation),
95% Student's-t UCL - UCL based upon Student's-t distribution

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-14
Site 86 Groundwater Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/L)													
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	1.00 - 1.00	4 / 62	620	IR86-GW10IW-09D	30.10	95% KM (t) UCL	NSV	207 [4]	TCEQ, 2006	-- / --	0.15	NO	EPC HQ less than one based on supplemental screening value
1,1,2-Trichloroethane	1.00 - 1.00	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,1-Dichloroethane	1.00 - 1.00	13 / 62	3.40	IR86-GW10IW-09D	0.57	95% KM (t) UCL	NSV	2570 [4]	TCEQ, 2006	-- / --	2.21E-04	NO	EPC HQ less than one based on supplemental screening value
1,2-Dibromo-3-chloropropane	0.50 - 0.50	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
1,2-Dibromoethane	0.50 - 0.50	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Butanone	10.0 - 10.0	0 / 24	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Hexanone	5.00 - 5.00	1 / 62	14.0	IR86-GW63-10A	3.49	95% Chebyshev UCL[3]	NSV	6130 [4]	TCEQ, 2006	-- / --	5.69E-04	NO	EPC HQ less than one based on supplemental screening value
4-Methyl-2-pentanone	5.00 - 5.00	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acetone	10.0 - 10.0	1 / 62	4.30	IR86-GW59IW-09D	4.30	Maximum Result	NSV	282,000	TCEQ, 2006	-- / --	1.52E-05	NO	Lab contaminant, EPC HQ less than one based on
Bromodichloromethane	0.50 - 0.50	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbon disulfide	1.00 - 1.00	3 / 62	3.40	IR86-GW58DW-10A	0.75	95% KM (t) UCL	NSV	105 [4]	TCEQ, 2006	-- / --	7.12E-03	NO	EPC HQ less than one based on supplemental screening value
Chloroethane	1.00 - 1.00	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
cis-1,2-Dichloroethene	1.00 - 1.00	35 / 62	350	IR86-GW15IW-09D	88.30	97.5% KM (Chebyshev) UCL	NSV	680	TCEQ, 2006	-- / --	0.13	NO	EPC HQ less than one based on supplemental screening value
Cyclohexane	1.00 - 1.00	5 / 62	32.0	IR86-GW27IW-09D	2.28	95% KM (t) UCL	NSV			-- / --	NSV	NO	Not detected in SW samples and likely to volatilize in SW
Dibromochloromethane	0.50 - 0.50	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dichlorodifluoromethane (Freon-12)	1.00 - 1.00	4 / 62	51.0	IR86-GW10IW-09D	6.22	95% KM (Chebyshev) UCL	NSV	1960 [4]	TCEQ, 2006	-- / --	3.17E-03	NO	EPC HQ less than one based on supplemental screening value
Ethylbenzene	1.00 - 1.00	4 / 62	4.60	IR86-GW52-09D	1.06	95% KM (t) UCL	4.30	--	--	1 / 62	0.25	NO	EPC HQ less than one, detected
Isopropylbenzene	1.00 - 1.00	2 / 62	0.46	IR86-GW52-09D	0.46	Maximum Result	NSV	255 [4]	TCEQ, 2006	-- / --	1.80E-03	NO	EPC HQ less than one based on supplemental screening value
Methyl acetate	1.00 - 1.00	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Methylcyclohexane	5.00 - 5.00	2 / 62	4.10	IR86-GW47-09D	4.10	Maximum Result	NSV			-- / --	NSV	NO	Not detected in SW samples and likely to volatilize in SW
Methyl-tert-butyl ether (MTBE)	1.00 - 1.00	1 / 62	66.0	IR86-GW39-10A	6.16	95% Chebyshev UCL[3]	NSV	5,000	Buchman, 2008	-- / --	1.23E-03	NO	EPC HQ less than one based on supplemental screening value
Styrene	1.00 - 1.00	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Tetrachloroethene	1.00 - 1.00	3 / 62	190	IR86-GW10IW-09D	26.60	97.5% KM (Chebyshev) UCL	45.0	--	--	1 / 62	0.59	NO	EPC HQ less than one, detected
trans-1,2-Dichloroethene	1.00 - 1.00	16 / 62	16.0	IR86-GW55IW-09D	1.94	95% KM (t) UCL	NSV	680	TCEQ, 2006	-- / --	2.85E-03	NO	EPC HQ less than one based on supplemental screening value
Trichloroethene	0.50 - 0.50	28 / 62	710	IR86-GW58IW-09D	119.00	97.5% KM (Chebyshev) UCL	NSV	970	TCEQ, 2006	-- / --	0.12	NO	EPC HQ less than one based on supplemental screening value
Trichlorofluoromethane (Freon-11)	0.50 - 0.50	0 / 62	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Vinyl chloride	0.50 - 0.50	13 / 62	140	IR86-GW55IW-09D	9.38	95% KM (t) UCL	NSV	2820 [4]	TCEQ, 2006	-- / --	3.33E-03	NO	EPC HQ less than one based on supplemental screening value
Xylene, total	0.50 - 0.50	3 / 62	6.80	IR86-GW52-09D	0.77	95% KM (t) UCL	NSV	850	TCEQ, 2006	-- / --	9.06E-04	NO	EPC HQ less than one based on supplemental screening value
Semivolatile Organic Compounds (µg/L)													
1,1-Biphenyl	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,2'-Oxybis(1-chloropropane)	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,5-Trichlorophenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4,6-Trichlorophenol	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4-Dichlorophenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4-Dimethylphenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,4-Dinitrotoluene	2.00 - 2.20	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2,6-Dinitrotoluene	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Chloronaphthalene	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Chlorophenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylnaphthalene	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Methylphenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Nitroaniline	2.00 - 2.20	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
2-Nitrophenol	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected

TABLE I-14
Site 86 Groundwater Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
3,3'-Dichlorobenzidine	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
3-Nitroaniline	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4,6-Dinitro-2-methylphenol	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Bromophenyl-phenylether	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chloro-3-methylphenol	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chloroaniline	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Chlorophenyl-phenylether	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Methylphenol	2.00 - 2.20	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
4-Nitroaniline	2.00 - 2.20	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Acenaphthylene	0.20 - 0.27	5 / 17	0.30	IR86-GW56-09D	0.25	95% KM (t) UCL	NSV	3 [5]	Buchman, 2008	-- / --	8.33E-02	NO	EPC HQ less than one based on supplemental screening value
Acetophenone	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Anthracene	0.20 - 0.22	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Atrazine	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzaldehyde	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(a)anthracene	0.20 - 0.22	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Benzo(a)pyrene	0.20 - 0.22	1 / 16	0.20	IR86-GW59DW-09D	0.14	95% Chebyshev UCL[3]	NSV	3 [5]	Buchman, 2008	-- / --	8.33E-02	NO	EPC HQ above one based on supplemental screening value
Benzo(b)fluoranthene	0.20 - 0.22	3 / 16	0.38	IR86-GW59DW-09D	0.17	95% KM (t) UCL	NSV	3 [5]	Buchman, 2008	-- / --	5.77E-02	NO	EPC HQ less than one based on supplemental screening value
Benzo(g,h,i)perylene	0.20 - 0.22	1 / 16	0.46	IR86-GW59DW-09D	0.22	95% Chebyshev UCL[3]	NSV	3 [5]	Buchman, 2008	-- / --	7.43E-02	NO	EPC HQ less than one based on supplemental screening value
Benzo(k)fluoranthene	0.20 - 0.22	1 / 16	0.31	IR86-GW59DW-09D	0.17	95% Chebyshev UCL[3]	NSV	3 [5]	Buchman, 2008	-- / --	5.77E-02	NO	EPC HQ less than one based on supplemental screening value
bis(2-Chloroethoxy)methane	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Chloroethyl)ether	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
bis(2-Ethylhexyl)phthalate	5.00 - 5.60	2 / 16	0.33	IR86-GW61DW-09D	0.33	Maximum Result	NSV	360	Buchman, 2008	-- / --	9.17E-04	NO	EPC HQ less than one based on supplemental screening value
Caprolactam	10.0 - 11.0	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Carbazole	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chrysene	0.20 - 0.22	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dibenz(a,h)anthracene	0.20 - 0.22	1 / 16	0.55	IR86-GW59DW-09D	0.25	95% Chebyshev UCL[3]	NSV	3 [5]	Buchman, 2008	-- / --	8.43E-02	NO	EPC HQ less than one based on supplemental screening value
Dibenzofuran	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Di-n-octylphthalate	1.00 - 1.10	0 / 15	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Fluorene	0.20 - 0.22	3 / 17	0.12	IR86-GW60-09D	0.12	Maximum Result	NSV	50	TCEQ, 2006	-- / --	2.40E-03	NO	EPC HQ less than one based on supplemental screening value
Hexachlorobenzene	1.00 - 1.10	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Hexachlorobutadiene	1.00 - 1.10	0 / 16	--	--	--	--	0.32	--	--	-- / --	--	NO	Not detected
Hexachlorocyclopentadiene	10.0 - 11.0	0 / 16	--	--	--	--	0.070	--	--	-- / --	--	NO	Not detected
Indeno(1,2,3-cd)pyrene	0.20 - 0.22	1 / 16	0.45	IR86-GW59DW-09D	0.22	95% Chebyshev UCL[3]	NSV	4.31 [4]	Buchman, 2008	-- / --	5.10E-02	NO	EPC HQ less than one based on supplemental screening value
n-Nitroso-di-n-propylamine	5.00 - 5.60	0 / 16	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Phenanthrene	0.20 - 0.22	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Pyrene	0.20 - 0.22	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Pesticide/Polychlorinated Biphenyls (µg/L)													
4,4'-DDT	0.025 - 0.027	0 / 17	--	--	--	--	0.0010	--	--	-- / --	--	NO	Not detected
alpha-Chlordane	0.025 - 0.027	0 / 17	--	--	--	--	0.0040	--	--	-- / --	--	NO	Not detected
Aroclor-1016	0.25 - 0.27	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Aroclor-1221	0.50 - 0.55	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Aroclor-1232	0.60 - 0.66	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Aroclor-1242	0.50 - 0.55	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Aroclor-1248	0.50 - 0.55	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected

TABLE I-14
Site 86 Groundwater Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value[1]	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[2]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Aroclor-1254	0.50 - 0.55	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Aroclor-1260	0.25 - 0.27	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
beta-BHC	0.025 - 0.027	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
delta-BHC	0.025 - 0.027	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Dieldrin	0.025 - 0.027	0 / 17	--	--	--	--	0.0019	--	--	-- / --	--	NO	Not detected
Endosulfan I	0.025 - 0.027	0 / 17	--	--	--	--	0.0087	--	--	-- / --	--	NO	Not detected
Endosulfan II	0.025 - 0.027	0 / 17	--	--	--	--	0.0087	--	--	-- / --	--	NO	Not detected
Endosulfan sulfate	0.025 - 0.027	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin	0.025 - 0.027	0 / 17	--	--	--	--	0.0023	--	--	-- / --	--	NO	Not detected
Endrin aldehyde	0.025 - 0.027	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Endrin ketone	0.025 - 0.027	0 / 17	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
gamma-BHC (Lindane)	0.025 - 0.027	0 / 17	--	--	--	--	0.016	--	--	-- / --	--	NO	Not detected
gamma-Chlordane	0.025 - 0.027	0 / 17	--	--	--	--	0.0040	--	--	-- / --	--	NO	Not detected
Heptachlor	0.025 - 0.027	0 / 17	--	--	--	--	0.0036	--	--	-- / --	--	NO	Not detected
Heptachlor epoxide	0.025 - 0.027	0 / 17	--	--	--	--	0.0036	--	--	-- / --	--	NO	Not detected
Methoxychlor	0.10 - 0.11	0 / 17	--	--	--	--	0.030	--	--	-- / --	--	NO	Not detected
Toxaphene	0.25 - 0.27	0 / 17	--	--	--	--	0.0020	--	--	-- / --	--	NO	Not detected
Inorganics (µg/L)													
Antimony	10.0 - 10.0	2 / 15	3.40	IR86-GW58-09D	3.40	Maximum Result	NSV	500	Buchman, 2008	-- / --	6.80E-03	NO	EPC HQ less than one based on supplemental screening value
Beryllium	4.00 - 4.00	0 / 15	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Chromium	5.00 - 12.0	4 / 15	76.0	IR86-GW59DW-09D	17.60	95% KM (t) UCL	50.0	--	--	1 / 15	0.35	NO	EPC HQ less than one
Cobalt	25.0 - 25.0	0 / 15	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected
Iron	-- - --	19 / 19	11,000	IR86-GW58-09D	4880.00	95% Approximate Gamma UCL	NSV	50	Buchman, 2008	-- / --	97.6	NO	Within range of background
Nickel	40.0 - 40.0	0 / 15	--	--	--	--	8.20	--	--	-- / --	--	NO	Not detected
Silver	5.00 - 5.00	9 / 15	2.50	IR86-GW58IW-09D	2.26	95% KM (t) UCL	0.23	--	--	9 / 15	9.83	NO	See text discussion.
Thallium	50.0 - 50.0	0 / 15	--	--	--	--	21.3	--	--	-- / --	--	NO	Not detected
Vanadium	50.0 - 50.0	0 / 15	--	--	--	--	NSV	--	--	-- / --	--	NO	Not detected

Notes:

[1] - Marine screening values
[2] - Count of detected samples exceeding or equaling Screening Value
[3] - ProUCL Version 4 does not offer a calculated UCL when there are too few unique detected results (one or sometimes more than one). In these instances, a 95% Chebyshev UCL using a proxy value of 1/2 the detection limit for NDs is calculated.
[4] - Fresh water screening value; marine screening value unavailable
[5] - An uncertainty factor of 100 was applied to the acute value

µg/L - Micrograms per liter
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/L - Milligrams per liter
NSV - No screening value

95% KM (t) UCL - UCL based upon Kaplan-Meier estimates using the Student's t-distribution cutoff value
95% Chebyshev UCL - UCL based upon UCL based on Chebyshev inequality
97.5% KM (Chebyshev) UCL - UCL based upon Kaplan-Meier estimates using the Chebyshev inequality
95% KM (Chebyshev) UCL - UCL based upon Kaplan-Meier estimates using the Chebyshev inequality
95% Approximate Gamma UCL - UCL based upon gamma distribution using chi-square approximation

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-15
Site 86 Sediment (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/kg)													
1,1,1-Trichloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2,2-Tetrachloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2-Trichloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1-Dichloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1-Dichloroethene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2,3-Trichlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2,4-Trichlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dibromo-3-chloropropane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dibromoethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dichloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dichloropropane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,3-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,4-Dichlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Butanone	14.0 - 22.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Hexanone	14.0 - 22.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Methyl-2-pentanone	14.0 - 22.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Acetone	57.0 - 100	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Benzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromochloromethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromodichloromethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromoform	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromomethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbon disulfide	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbon tetrachloride	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chlorobenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloroethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloroform	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloromethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
cis-1,2-Dichloroethene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
cis-1,3-Dichloropropene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Cyclohexane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dibromochloromethane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dichlorodifluoromethane (Freon-12)	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Ethylbenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Isopropylbenzene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
m- and p-Xylene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methyl acetate	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methylcyclohexane	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methylene chloride	11.0 - 11.0	1 / 2	0.91	IR86-SD01-08B	0.91	Maximum Result	NSV	775	TCEQ, 2006	-- / --	1.17E-03	NO	EPC HQ less than one based on supplemental screening value
Methyl-tert-butyl ether (MTBE)	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
o-Xylene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Styrene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Tetrachloroethene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Toluene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected

TABLE I-15
Site 86 Sediment (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
trans-1,2-Dichloroethene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
trans-1,3-Dichloropropene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Trichloroethene	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Trichlorofluoromethane (Freon-11)	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Vinyl chloride	6.90 - 11.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Semivolatile Organic Compounds (µg/kg)													
1,1-Biphenyl	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2,4,5-Tetrachlorobenzene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,2'-Oxybis(1-chloropropane)	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,3,4,6-Tetrachlorophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4,5-Trichlorophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4,6-Trichlorophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dichlorophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dimethylphenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dinitrophenol	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dinitrotoluene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,6-Dinitrotoluene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Chloronaphthalene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Chlorophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Methylphenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Nitroaniline	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Nitrophenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
3,3'-Dichlorobenzidine	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
3-Nitroaniline	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4,6-Dinitro-2-methylphenol	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Bromophenyl-phenylether	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chloro-3-methylphenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chloroaniline	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chlorophenyl-phenylether	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Methylphenol	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Nitroaniline	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Nitrophenol	460 - 730	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Acenaphthene	4.60 - 7.30	0 / 2	--	--	--	--	6.71	--	--	-- / --	--	NO	Not Detected
Acenaphthylene	4.60 - 7.30	0 / 2	--	--	--	--	5.87	--	--	-- / --	--	NO	Not Detected
Acetophenone	240 - 240	1 / 2	110	IR86-SD02-08B	110	Maximum Result	NSV	--	--	-- / --	NSV	NO	No screening value
Atrazine	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Benzaldehyde	240 - 240	1 / 2	86.0	IR86-SD02-08B	86	Maximum Result	NSV	--	--	-- / --	NSV	NO	No screening value
bis(2-Chloroethoxy)methane	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
bis(2-Chloroethyl)ether	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
bis(2-Ethylhexyl)phthalate	-- - --	2 / 2	730	IR86-SD02-08B	730	Maximum Result	NSV	182	Buchman, 2008	-- / --	4.01	NO	Lab contaminant
Butylbenzylphthalate	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Caprolactam	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbazole	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dibenz(a,h)anthracene	4.60 - 4.60	1 / 2	7.50	IR86-SD02-08B	7.50	Maximum Result	6.22	--	--	1 / 2	1.21	NO	Low magnitude of exceedance
Dibenzofuran	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Diethylphthalate	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dimethyl phthalate	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected

TABLE I-15
Site 86 Sediment (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Di-n-butylphthalate	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Di-n-octylphthalate	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachlorobenzene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachlorobutadiene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachlorocyclopentadiene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachloroethane	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Isophorone	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
n-Nitroso-di-n-propylamine	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
n-Nitrosodiphenylamine	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Nitrobenzene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Pentachlorophenol	9.30 - 15.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Phenol	240 - 240	1 / 2	63.0	IR86-SD02-08B	63.0	Maximum Result	NSV	48	Buchman, 2008	-- / --	1.31	NO	Low magnitude of exceedance
Pesticide/Polychlorinated Biphenyls (µg/kg)													
4,4'-DDD	-- - --	2 / 2	16.0	IR86-SD02-08B	16.00	Maximum Result	1.22	--	--	2 / 2	13.11	YES	EPC HQ above one; however, no food chain effects.
4,4'-DDE	-- - --	2 / 2	47.0	IR86-SD02-08B	47.00	Maximum Result	2.07	--	--	1 / 2	22.71	YES	EPC HQ above one; however, no food chain effects.
4,4'-DDT	4.60 - 4.60	1 / 2	30.0	IR86-SD02-08B	30.00	Maximum Result	1.19	--	--	1 / 2	25.21	YES	EPC HQ above one; however, no food chain effects.
Aldrin	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
alpha-BHC	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
alpha-Chlordane	2.40 - 2.40	1 / 2	9.30	IR86-SD02-08B	9.30	Maximum Result	0.50	--	--	1 / 2	18.60	YES	EPC HQ above one; however, no food chain effects.
Aroclor-1016	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1221	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1232	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1242	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1248	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1254	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1260	46.0 - 73.0	0 / 2	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1262	46.0 - 73.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Aroclor-1268	46.0 - 73.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
beta-BHC	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
delta-BHC	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dieldrin	4.60 - 7.30	0 / 2	--	--	--	--	0.020	--	--	-- / --	--	NO	Not Detected
Endosulfan I	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endosulfan II	4.60 - 7.30	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endosulfan sulfate	4.60 - 7.30	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endrin	4.60 - 7.30	0 / 2	--	--	--	--	0.020	--	--	-- / --	--	NO	Not Detected
Endrin aldehyde	4.60 - 7.30	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endrin ketone	4.60 - 7.30	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
gamma-BHC (Lindane)	2.40 - 3.80	0 / 2	--	--	--	--	0.32	--	--	-- / --	--	NO	Not Detected
gamma-Chlordane	-- - --	2 / 2	8.60	IR86-SD02-08B	8.60	Maximum Result	NSV	4,000	Buchman, 2008	-- / --	2.15E-03	NO	EPC HQ less than one based on supplemental screening value
Heptachlor	2.40 - 3.80	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Heptachlor epoxide	2.40 - 2.40	1 / 2	2.00	IR86-SD02-08B	2.00	Maximum Result	NSV	16	TCEQ, 2006	-- / --	0.13	NO	EPC HQ less than one based on supplemental screening value
Methoxychlor	24.0 - 38.0	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Toxaphene	240 - 380	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected

TABLE I-15
Site 86 Sediment (Western Pond) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Inorganics (mg/kg)													
Aluminum	-- - --	2 / 2	5,320	IR86-SD02-08B	5,320	Maximum Result	NSV	25,500	Ingersoll et al., 1996	-- / --	0.21	NO	EPC HQ less than one based on supplemental screening value
Barium	-- - --	2 / 2	18.2	IR86-SD02-08B	18.20	Maximum Result	NSV	130.1 [2]	Buchman, 2008	-- / --	0.14	NO	EPC HQ less than one based on supplemental screening value
Beryllium	0.74 - 1.20	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Cadmium	0.74 - 0.74	1 / 2	1.10	IR86-SD02-08B	1.10	Maximum Result	0.68	--	--	1 / 2	1.63	NO	Low magnitude of exceedance. No food chain effects.
Cobalt	7.40 - 7.40	1 / 2	0.93	IR86-SD02-08B	0.93	Maximum Result	NSV	50	Persaud et al., 1993	-- / --	0.02	NO	EPC HQ less than one based on supplemental screening value
Iron	-- - --	2 / 2	7,150	IR86-SD02-08B	7,150	Maximum Result	NSV	20,000	Persaud et al., 1993	-- / --	0.36	NO	EPC HQ less than one based on supplemental screening value
Lead	-- - --	2 / 2	50.6	IR86-SD02-08B	50.6	Maximum Result	30.2	--	--	1 / 2	1.68	NO	Low magnitude of exceedance. No food chain effects.
Manganese	-- - --	2 / 2	20.5	IR86-SD02-08B	20.5	Maximum Result	NSV	460	Persaud et al., 1993	-- / --	0.04	NO	EPC HQ less than one based on supplemental screening value
Mercury	0.15 - 0.23	0 / 2	--	--	--	--	0.13	--	--	-- / --	--	NO	Not Detected
Selenium	5.20 - 8.50	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Silver	1.50 - 2.40	0 / 2	--	--	--	--	0.73	--	--	-- / --	--	NO	Not Detected
Thallium	3.70 - 6.10	0 / 2	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Vanadium	-- - --	2 / 2	24.3	IR86-SD02-08B	24.3	Maximum Result	NSV	57 [2]	Buchman, 2008	-- / --	0.43	NO	EPC HQ less than one based on supplemental screening value
Zinc	-- - --	2 / 2	129	IR86-SD02-08B	129	Maximum Result	124	--	--	1 / 2	1.04	NO	Low magnitude of exceedance

Notes:

[1] - Count of detected samples exceeding or equaling Screening Value
[2] - Marine sediment screening value

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-16
Site 86 Sediment (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Volatile Organic Compounds (µg/kg)													
1,1,1-Trichloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2,2-Tetrachloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1,2-Trichloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1-Dichloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,1-Dichloroethene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2,4-Trichlorobenzene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dibromo-3-chloropropane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dibromoethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dichlorobenzene	6.30 - 15.0	2 / 8	5.90	IR86-SD106-0-0_5-09D	5.9	Maximum Result	NSV	4,950	TCEQ, 2006	-- / --	1.19E-03	NO	EPC HQ less than one based on supplemental screening value
1,2-Dichloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,2-Dichloropropane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
1,3-Dichlorobenzene	6.30 - 16.0	1 / 8	2.70	IR86-SD108-0-0_5-09D	2.7	Maximum Result	NSV	350	TCEQ, 2006	-- / --	7.71E-03	NO	EPC HQ less than one based on supplemental screening value
1,4-Dichlorobenzene	6.30 - 16.0	1 / 8	2.60	IR86-SD108-0-0_5-09D	2.6	Maximum Result	NSV	4,650	TCEQ, 2006	-- / --	5.59E-04	NO	EPC HQ less than one based on supplemental screening value
2-Butanone	13.0 - 13.0	0 / 1	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Hexanone	13.0 - 33.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Methyl-2-pentanone	13.0 - 33.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Acetone	25.0 - 65.0	2 / 8	50.0	IR86-SD110-0-0_5-09D	45.75	95% KM (t) UCL	NSV	360,180	TCEQ, 2006	-- / --	1.27E-04	NO	Lab contaminant
Benzene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromodichloromethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromoform	13.0 - 33.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Bromomethane	13.0 - 33.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbon disulfide	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbon tetrachloride	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chlorobenzene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloroethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloroform	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Chloromethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
cis-1,2-Dichloroethene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
cis-1,3-Dichloropropene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Cyclohexane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dibromochloromethane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dichlorodifluoromethane (Freon-12)	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Ethylbenzene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Isopropylbenzene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methyl acetate	6.30 - 16.0	0 / 7	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methylcyclohexane	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methylene chloride	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Methyl-tert-butyl ether (MTBE)	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Styrene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Tetrachloroethene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Toluene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
trans-1,2-Dichloroethene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
trans-1,3-Dichloropropene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Trichloroethene	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Trichlorofluoromethane (Freon-11)	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Vinyl chloride	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Xylene, total	6.30 - 16.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Semivolatile Organic Compounds (µg/kg)													
1,1-Biphenyl	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,2'-Oxybis(1-chloropropane)	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4,5-Trichlorophenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4,6-Trichlorophenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dichlorophenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dimethylphenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dinitrophenol	380 - 3,600	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,4-Dinitrotoluene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2,6-Dinitrotoluene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Chloronaphthalene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Chlorophenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Methylnaphthalene	290 - 2,700	0 / 8	--	--	--	--	23.2	--	--	-- / --	--	NO	Not Detected
2-Methylphenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
2-Nitroaniline	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected

TABLE I-16
Site 86 Sediment (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
2-Nitrophenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
3- and 4-Methylphenol	77.0 - 730	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
3,3'-Dichlorobenzidine	290 - 2,700	0 / 7	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
3-Nitroaniline	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4,6-Dinitro-2-methylphenol	450 - 4,200	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Bromophenyl-phenylether	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chloro-3-methylphenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chloroaniline	290 - 2,700	0 / 6	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Chlorophenyl-phenylether	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Nitroaniline	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
4-Nitrophenol	340 - 3,300	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Acenaphthene	3.80 - 530	0 / 7	--	--	--	--	6.71	--	--	-- / --	--	NO	Not Detected
Acenaphthylene	3.80 - 72.0	2 / 7	230	IR86-SD108-0-0_5-09D	181.7	95% Chebyshev UCL[3]	5.87	--	--	2 / 7	31.0	YES	EPC HQ above one; however, no food chain effects
Acetophenone	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Anthracene	-- - --	8 / 8	1,200	IR86-SD108-0-0_5-09D	680.6	95% Approximate Gamma UCL	46.9	--	--	5 / 8	14.5	NO	EPC HQ above one; however, no food chain effects
Atrazine	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Benzaldehyde	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Benzo(a)anthracene	-- - --	8 / 8	4,700	IR86-SD108-0-0_5-09D	2596	95% Approximate Gamma UCL	74.8	--	--	7 / 8	34.7	YES	EPC HQ above one; however, no food chain effects
Benzo(a)pyrene	-- - --	8 / 8	6,200	IR86-SD108-0-0_5-09D	3647	95% Approximate Gamma UCL	88.8	--	--	7 / 8	41.1	YES	EPC HQ above one; however, no food chain effects
Benzo(b)fluoranthene	-- - --	8 / 8	12,000	IR86-SD108-0-0_5-09D	7435	95% Approximate Gamma UCL	655	--	--	5 / 8	11.4	YES	EPC HQ above one; however, no food chain effects
Benzo(g,h,i)perylene	-- - --	8 / 8	6,600	IR86-SD108-0-0_5-09D	4100	95% Approximate Gamma UCL	655	--	--	4 / 8	6.3	YES	EPC HQ above one; however, no food chain effects
Benzo(k)fluoranthene	-- - --	8 / 8	4,000	IR86-SD108-0-0_5-09D	2287	95% Approximate Gamma UCL	655	--	--	2 / 8	3.5	YES	EPC HQ above one; however, no food chain effects
bis(2-Chloroethoxy)methane	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
bis(2-Chloroethyl)ether	38.0 - 360	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
bis(2-Ethylhexyl)phthalate	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Butylbenzylphthalate	290 - 2,700	2 / 8	280	IR86-SD108-0-0_5-09D	280	Maximum Result	NSV	63 [3]	Buchman, 2008	-- / --	4.44	NO	Lab contaminant
Caprolactam	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Carbazole	290 - 2,700	4 / 8	980	IR86-SD108-0-0_5-09D	596.5	95% KM (t) UCL	NSV	--	--	-- / --	NSV	NO	No screening value
Chrysene	-- - --	8 / 8	7,000	IR86-SD108-0-0_5-09D	4198	95% Approximate Gamma UCL	108	--	--	7 / 8	38.9	YES	EPC HQ above one; however, no food chain effects
Dibenz(a,h)anthracene	62.0 - 530	3 / 7	100	IR86-SD112-0-0_5-09D	88.61	95% KM (t) UCL	6.22	--	--	3 / 7	14.2	YES	EPC HQ above one; however, no food chain effects
Dibenzofuran	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Diethylphthalate	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Dimethyl phthalate	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Di-n-butylphthalate	740 - 2,700	2 / 8	230	IR86-SD108-0-0_5-09D	230	95% KM (BCA) UCL	NSV			-- / --	NSV	NO	No screening value
Di-n-octylphthalate	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Fluoranthene	-- - --	8 / 8	14,000	IR86-SD108-0-0_5-09D	8238	95% Approximate Gamma UCL	113			7 / 8	72.9	YES	EPC HQ above one; however, no food chain effects
Hexachlorobenzene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachlorobutadiene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachlorocyclopentadiene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Hexachloroethane	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Indeno(1,2,3-cd)pyrene	-- - --	8 / 8	5,700	IR86-SD108-0-0_5-09D	3457	95% Approximate Gamma UCL	655			4 / 8	5.3	YES	EPC HQ above one; however, no food chain effects
Isophorone	210 - 2,000	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
n-Nitroso-di-n-propylamine	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
n-Nitrosodiphenylamine	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Nitrobenzene	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Pentachlorophenol	480 - 4,600	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Phenanthrene	-- - --	8 / 8	3,600	IR86-SD108-0-0_5-09D	2074	95% Approximate Gamma UCL	86.7			5 / 8	23.9	YES	EPC HQ above one; however, no food chain effects
Phenol	290 - 2,700	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Pyrene	-- - --	8 / 8	8,100	IR86-SD108-0-0_5-09D	4705	95% Approximate Gamma UCL	153			7 / 8	30.8	YES	EPC HQ above one; however, no food chain effects
Pesticide/Polychlorinated Biphenyls (µg/kg)													
4,4'-DDE	7.00 - 120	2 / 8	6.80	IR86-SD110-10A	6.8	Maximum Result	2.07	--	--	1 / 8	3.3	NO	EPC HQ above one; however, no food chain effects and only 1 of 8 samples exceeded the ESV.
4,4'-DDT	7.00 - 120	4 / 8	17.0	IR86-SD110-10A	13.18	95% KM (t) UCL	1.19	--	--	4 / 8	11.1	YES	EPC HQ above one; however, no food chain effects
Aldrin	1.90 - 60.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
alpha-BHC	1.90 - 60.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
alpha-Chlordane	1.90 - 60.0	0 / 8	--	--	--	--	0.50	--	--	-- / --	--	NO	Not Detected
Aroclor-1016	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1221	79.0 - 190	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1232	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1242	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1248	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1254	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
Aroclor-1260	39.0 - 94.0	0 / 8	--	--	--	--	21.6	--	--	-- / --	--	NO	Not Detected
beta-BHC	1.90 - 60.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
delta-BHC	1.90 - 60.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected

TABLE I-16
Site 86 Sediment (Drainage Ditch) Screen - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Range of Non-detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Exposure Point Concentration	EPC Basis	Screening Value	Supplemental Screening Value	Supplemental Screening Value Source	Frequency of Exceedance[1]	EPC Hazard Quotient	Step 3A COPC?	Rationale
Dieldrin	3.70 - 120	0 / 8	--	--	--	--	0.020	--	--	-- / --	--	NO	Not Detected
Endosulfan I	1.90 - 60.0	1 / 8	4.60	IR86-SD105-10A	4.6	Maximum Result	NSV	2.9 [3]	Buchman, 2008	-- / --	1.59	NO	Low magnitude of exceedance. No food chain effects.
Endosulfan II	3.70 - 120	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endosulfan sulfate	3.70 - 120	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Endrin	3.70 - 120	0 / 8	--	--	--	--	0.020	--	--	-- / --	--	NO	Not Detected
Endrin aldehyde	3.70 - 66.0	3 / 8	22.0	IR86-SD108-10A	12.34	95% KM (t) UCL	NSV	480	EPA, 2003	-- / --	0.03	NO	EPC HQ less than one based on supplemental screening value
Endrin ketone	3.70 - 120	4 / 8	67.0	IR86-SD108-10A	33.53	95% KM (t) UCL	NSV			-- / --	NSV	NO	No screening value
gamma-BHC (Lindane)	1.90 - 60.0	0 / 8	--	--	--	--	0.32	--	--	-- / --	--	NO	Not Detected
gamma-Chlordane	3.60 - 60.0	1 / 8	0.70	IR86-SD107-0-0_5-09D	0.7	Maximum Result	NSV	4,000	Buchman, 2008	-- / --	1.75E-04	NO	EPC HQ less than one based on supplemental screening value
Heptachlor	1.90 - 60.0	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Heptachlor epoxide	1.90 - 60.0	1 / 8	3.40	IR86-SD113-10A	3.4	Maximum Result	NSV	16	TCEQ, 2006	-- / --	0.21	NO	EPC HQ less than one based on supplemental screening value
Methoxychlor	19.0 - 600	0 / 8	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Toxaphene	34.0 - 34.0	0 / 1	--	--	--	--	NSV	--	--	-- / --	--	NO	Not Detected
Inorganics (mg/kg)													
Aluminum	-- - --	8 / 8	17,000	IR86-SD109-0-0_5-09D	15384	95% Student's-t UCL	NSV	25,500	Ingersoll et al., 1996	-- / --	0.60	NO	EPC HQ less than one based on supplemental screening value
Antimony	-- - --	8 / 8	5.90	IR86-SD108-0-0_5-09D	3.757	95% H-UCL	2.00	--	--	1 / 8	1.9	NO	Low magnitude of exceedance
Arsenic	0.80 - 0.80	7 / 8	9.70	IR86-SD112-0-0_5-09D	5.35	95% KM (BCA) UCL	7.24	--	--	1 / 8	0.7	NO	EPC HQ less than one
Barium	-- - --	8 / 8	78.0	IR86-SD112-0-0_5-09D	57.15	95% Student's-t UCL	NSV	130.1 [3]	Buchman, 2008	-- / --	0.44	NO	EPC HQ less than one based on supplemental screening value
Beryllium	-- - --	8 / 8	1.20	IR86-SD112-0-0_5-09D	0.695	95% Approximate Gamma UCL	NSV	--	--	-- / --	NSV	NO	No screening value
Cadmium	-- - --	8 / 8	8.20	IR86-SD110-0-0_5-09D	5.822	95% Student's-t UCL	0.68	--	--	8 / 8	8.6	NO	EPC HQ above one; however, no food chain effects
Cobalt	-- - --	8 / 8	7.90	IR86-SD110-0-0_5-09D	6.003	95% Student's-t UCL	NSV	50	Persaud et al., 1993	-- / --	0.12	NO	EPC HQ less than one based on supplemental screening value
Copper	-- - --	8 / 8	35.0	IR86-SD110-0-0_5-09D	24.95	95% Student's-t UCL	18.7	--	--	3 / 8	1.3	NO	Low magnitude of exceedance
Iron	-- - --	8 / 8	30,000	IR86-SD112-0-0_5-09D	18197	95% Approximate Gamma UCL	NSV	20,000	Persaud et al., 1993	-- / --	0.91	NO	EPC HQ less than one based on supplemental screening value
Lead	-- - --	8 / 8	66.0	IR86-SD108-0-0_5-09D	45.27	95% Student's-t UCL	30.2	--	--	3 / 8	1.5	NO	Low magnitude of exceedance. No food chain effects.
Manganese	-- - --	8 / 8	110	IR86-SD105-0-0_5-09D	83.87	95% Student's-t UCL	NSV	460	Persaud et al., 1993	-- / --	0.18	NO	EPC HQ less than one based on supplemental screening value
Nickel	-- - --	8 / 8	19.0	IR86-SD110-0-0_5-09D	15.56	95% Student's-t UCL	15.9	--	--	2 / 8	1.0	NO	EPC HQ equals one
Selenium	0.60 - 1.20	4 / 8	28.0	IR86-SD108-0-0_5-09D	28	Maximum Result	NSV	1 [3]	Buchman, 2008	-- / --	28	**YES**	EPC HQ above one based on supplemental screening value
Silver	-- - --	8 / 8	1.50	IR86-SD112-0-0_5-09D	0.886	95% Student's-t UCL	0.73	--	--	2 / 8	1.2	NO	Low magnitude of exceedance. No food chain effects.
Thallium	3.00 - 5.80	3 / 8	3.40	IR86-SD108-0-0_5-09D	2.831	95% KM (t) UCL	NSV	--	--	-- / --	NSV	NO	No screening value.
Vanadium	-- - --	8 / 8	52.0	IR86-SD112-0-0_5-09D	37.35	95% Student's-t UCL	NSV	57 [3]	Buchman, 2008	-- / --	0.66	NO	EPC HQ less than one based on supplemental screening value
Zinc	-- - --	8 / 8	190	IR86-SD110-0-0_5-09D	153.7	95% Student's-t UCL	124	--	--	4 / 8	1.2	NO	Low magnitude of exceedance

Notes:

[1] - Count of detected samples exceeding or equaling Screening Value
[2] - ProUCL Version 4 does not offer a calculated UCL when there are too few unique detected results (one or sometimes more than one). In these instances, a 95% Chebyshev UCL using a proxy value of 1/2 the detection limit for NDs is calculated.
[3] - Marine sediment screening value

µg/kg - Micrograms per kilogram
COPC - Contaminant of potential concern
EPC - Exposure point concentration
HQ - Hazard quotient
mg/kg - Milligrams per kilogram
NSV - No screening value

95% KM (t) UCL - UCL based upon Kaplan-Meier estimates using the Student's t-distribution cutoff value
95% Chebyshev UCL - UCL based upon UCL based on Chebyshev inequality
95% Approximate Gamma UCL - UCL based upon gamma distribution using chi-square approximation
95% Student's-t UCL - UCL based upon Student's-t distribution
95% H-UCL – UCL based upon Land's H-statistic
95% KM (BCA) UCL - UCL based upon Kaplan-Meier estimates using the corrected accelerated bootstrap method

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-17
Hazard Quotients Based on Maximum Concentrations for Wildlife Receptors Exposed to Bioaccumulative Surface Soil and Surface Water Analytes at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86 - Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Short-tailed Shrew			White-footed Mouse			Meadow Vole			Red Fox		
	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC
Inorganics												
Cadmium	**9.36**	0.94	**2.96**	**3.31**	0.33	**1.05**	**1.67**	0.17	0.53	0.78	0.16	0.35
Copper	0.08	0.06	0.07	0.10	0.07	0.09	0.07	0.05	0.06	0.16	0.13	0.14
Lead	**2.93**	0.29	0.93	**1.44**	0.14	0.46	**1.20**	0.12	0.38	0.36	0.04	0.11
Semivolatile Organics												
Benzo(a)pyrene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Chemical	American Robin			Canada Goose			Mourning Dove			Red-tailed Hawk		
	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC
Inorganics												
Cadmium	**3.09**	0.22	0.83	0.28	0.02	0.08	**1.02**	0.07	0.27	0.24	0.02	0.06
Copper	0.08	0.06	0.07	0.02	0.02	0.02	0.07	0.05	0.06	0.03	0.02	0.02
Lead	**3.39**	0.68	**1.51**	**2.82**	0.28	0.89	**10.18**	**1.02**	**3.22**	0.47	0.09	0.21
Semivolatile Organics												
Benzo(a)pyrene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes:

HQs in **bold** exceed one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-18
Hazard Quotients Based on EPC for the Mourning Dove Exposed to Lead at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Mourning Dove		
	NOAEL	LOAEL	MATC
Inorganics			
Lead	**7.09**	0.71	**2.24**

Notes:

HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-19
Hazard Quotients Based on Maximum Concentrations for Wildlife Receptors Exposed to Bioaccumulative Sediment and Surface Water (Western Pond) Analytes at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Raccoon			Great Blue Heron			Barn Swallow		
	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC
Inorganics									
Cadmium	0.12	0.02	0.06	<0.01	<0.01	<0.01	**1.10**	0.08	0.30
Lead	0.13	0.01	0.04	0.10	0.02	0.04	**2.33**	0.47	1.04
Zinc	0.56	0.11	0.25	0.08	<0.01	0.03	**19.95**	**2.21**	**6.64**
Pesticides/PCBs									
4,4'-DDD	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDE	<0.01	<0.01	<0.01	0.27	0.03	0.08	0.15	0.01	0.05
4,4'-DDT	<0.01	<0.01	<0.01	0.06	<0.01	0.02	0.06	<0.01	0.02
alpha-Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes:

HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-20
Hazard Quotients Based on Arithmetic Mean Concentrations for Barn Swallows Exposed to Zinc in Sediment and Surface Water (Western Pond) at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Barn swallow		
	NOAEL	LOAEL	MATC
Inorganics			
Zinc	**10.75**	**1.19**	**3.58**

Notes:

HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-21
Hazard Quotients Based on Maximum Concentrations for Wildlife Receptors Exposed to Bioaccumulative Sediment and Surface Water (Drainage Ditch) Analytes at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Raccoon			Great Blue Heron			Barn Swallow		
	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC
Inorganics									
Cadmium	0.93	0.19	0.41	0.06	<0.01	0.02	**8.19**	0.59	**2.21**
Copper	0.35	0.27	0.31	<0.01	<0.01	<0.01	**2.79**	**2.13**	**2.44**
Lead	0.11	0.01	0.03	0.08	0.02	0.03	**2.63**	0.53	**1.18**
Selenium	**7.81**	**4.73**	**6.08**	1.00	0.20	0.45	**29.99**	**8.80**	**16.24**
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Zinc	0.82	0.16	0.37	0.12	0.01	0.04	**29.39**	**3.25**	**9.78**
Pesticides/PCBs									
4,4'-DDE	<0.01	<0.01	<0.01	0.04	<0.01	0.01	0.02	<0.01	<0.01
4,4'-DDT	<0.01	<0.01	<0.01	0.03	<0.01	0.01	0.04	<0.01	0.01
Endosulfan I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Semivolatile Organics									
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.01
Anthracene	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.02	<0.01	<0.01
Benzo(a)anthracene	0.07	0.01	0.03	0.04	<0.01	0.02	0.44	0.09	0.20
Benzo(a)pyrene	0.04	<0.01	0.02	0.06	0.01	0.03	0.08	0.02	0.04
Benzo(b)fluoranthene	0.07	0.01	0.03	0.11	0.02	0.05	0.13	0.03	0.06
Benzo(g,h,i)perylene	0.04	<0.01	0.02	0.06	0.01	0.03	0.13	0.03	0.06
Benzo(k)fluoranthene	0.03	<0.01	0.01	0.04	<0.01	0.02	0.11	0.02	0.05
Chrysene	0.06	0.01	0.03	0.06	0.01	0.03	0.16	0.03	0.07
Dibenz(a,h)anthracene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoranthene	<0.01	<0.01	<0.01	0.13	0.03	0.06	0.29	0.06	0.13
Indeno(1,2,3-cd)pyrene	0.04	<0.01	0.02	0.05	0.01	0.02	0.13	0.03	0.06
Phenanthrene	<0.01	<0.01	<0.01	0.03	<0.01	0.01	0.16	0.03	0.07
Pyrene	0.10	0.02	0.04	0.07	0.01	0.03	0.43	0.09	0.19

Notes:

Values based on the maximum concentration
HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-22
Hazard Quotients based on the EPC for Barn Swallow Exposed to Copper and Zinc in Sediment and Surface Water (Drainage Ditch) at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Barn Swallow		
	NOAEL	LOAEL	MATC
Inorganics			
Copper	**2.10**	**1.60**	**1.83**
Zinc	**23.77**	**2.63**	**7.91**

Notes:

A conservative estimate of the mean could not be calculated for selenium
HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level
MATC - Maximum acceptable toxicant concentrations
NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL
Checked by: K.Taylor/DFW

TABLE I-23
Hazard Quotients based on the Arithmentic Mean for Wildlife Receptors Exposed to Copper, Selenium, and Zinc in Sediment and Surface Water (Drainage Ditch) at Site 86 - Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Raccoon			Barn Swallow		
	NOAEL	LOAEL	MATC	NOAEL	LOAEL	MATC
Inorganics						
Copper	0.21	0.16	0.18	**1.41**	**1.08**	**1.23**
Selenium	**1.18**	0.72	0.92	**4.55**	**1.34**	**2.47**
Zinc	0.54	0.11	0.24	**17.45**	**1.93**	**5.81**

Notes:

HQs in **bold** exceed a value of one

LOAEL - Lowest observable effect level

MATC - Maximum acceptable toxicant concentrations

NOAEL - No observable effect level

Toxicity values and exposure parameters used in the wildlife exposure calculations can be found in Appendix J-2.

Generated by: S.Kent/ATL

Checked by: K.Taylor/DFW

TABLE I-2.1
Ingestion Screening Values for Mammals
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference
Inorganics								
Cadmium	rat	0.303	6 weeks	oral (gavage)	reproduction	10.0	1.00	Sample et al. 1996
Copper	mouse	0.03	1 month + GD 0-19	oral in diet	developmental	104	78.0	ATSDR 1990a
Lead	rat	0.35	3 generations	oral in diet	reproduction	80.0	8.00	Sample et al. 1996
Selenium	rat	0.35	1 year	oral in water	reproduction	0.33	0.20	Sample et al. 1996
Silver	rat	0.35	2 weeks	oral in water	survival	45.3	9.06	ATSDR 1990b
Zinc	rat	0.35	GD 1-16	oral in diet	reproduction	320	160	Sample et al. 1996
Semivolatile Organics								
Acenaphthylene	mouse	0.03	13 weeks	oral (gavage)	reproduction	700	350	ATSDR 1995a
Anthracene	mouse	0.03	13 weeks	oral (gavage)	reproduction	5,000	1,000	ATSDR 1995a
Benzo(a)anthracene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Benzo(a)pyrene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Benzo(b)fluoranthene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Benzo(g,h,i)perylene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Benzo(k)fluoranthene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Chrysene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Dibenz(a,h)anthracene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Fluoranthene	mouse	0.03	13 weeks	oral (gavage)	reproduction	2,500	500	ATSDR 1995a
Indeno(1,2,3-cd)pyrene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Phenanthrene	mouse	0.03	13 weeks	oral (gavage)	reproduction	2,500	500	ATSDR 1995a
Pyrene	mouse	0.03	GD 7-16	oral (gavage)	reproduction	10.0	2.00	Sample et al. 1996
Pesticides/PCBs								
4,4'-DDD	rat	0.35	2 years	oral in diet	reproduction	4.00	0.80	Sample et al. 1996
4,4'-DDE	rat	0.35	2 years	oral in diet	reproduction	4.00	0.80	Sample et al. 1996
4,4'-DDT	rat	0.35	2 years	oral in diet	reproduction	4.00	0.80	Sample et al. 1996
alpha-Chlordane	mouse	0.03	6 generations	oral in diet	reproduction	9.16	4.58	Sample et al. 1996
Endosulfan I	rat	0.35	30 days	oral (gavage)	fertility	7.50	1.50	Sample et al. 1996

Generated By: S.Kent/ATL
Checked By: K.Taylor/DFW

TABLE I-2.2
Ingestion Screening Values for Birds at Site 86
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference
Inorganics								
Cadmium	mallard	1.15	90 days	oral in diet	reproduction	20.0	1.45	Sample et al. 1996
Copper	chicken (chicks)	0.534	10 weeks	oral in diet	growth/survival	61.7	47.0	Sample et al. 1996
Lead[b]	Japanese quail	0.15	12 weeks	oral in diet	reproduction	11.3	1.13	Sample et al. 1996
Lead	American kestrel	0.13	7 months	oral in diet	reproduction	19.3	3.85	Sample et al. 1996
Selenium[a]	black-crowned night-heron	0.88	94 days	oral in diet	reproduction	9.00	1.80	Sample et al. 1996
Selenium[b]	mallard	1.00	100 days	oral in diet	reproduction	0.80	0.40	Sample et al. 1996
Selenium	screech owl	0.20	13.7 weeks	oral in diet	reproduction	1.50	0.44	Sample et al. 1996
Silver[b]	mallard	1.10	14 days	oral in diet	survival	178	35.6	USEPA 1999
Silver	chicken (chicks)	0.80	not specified	oral in diet	growth	35.0	7.00	Eisler 1996
Zinc	chicken	1.94	44 weeks	oral in diet	reproduction	131	14.5	Sample et al. 1996
Semivolatile Organics								
Acenaphthylene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Anthracene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Benzo(a)anthracene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Benzo(a)pyrene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Benzo(b)fluoranthene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Benzo(g,h,i)perylene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Benzo(k)fluoranthene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Chrysene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Dibenz(a,h)anthracene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Fluoranthene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Indeno(1,2,3-cd)pyrene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Phenanthrene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Pyrene	chicken	1.50	35 days	oral in diet	reproduction	35.5	7.10	Rigdon and Neal 1963
Pesticides/PCBs								
4,4'-DDD	Japanese quail	0.11	3 generations	oral in diet	reproduction	5.00	0.50	USEPA 1995b
4,4'-DDD[c]	barn owl	0.47	2 years	oral in diet	reproduction	0.40	0.08	Blus 1996
4,4'-DDD[b]	mallard	1.00	2 years	oral in diet	reproduction	0.60	0.12	USEPA 1995b
4,4'-DDD[a]	bald eagle	4.74	112 days	oral in diet	survival	3.00	0.30	USEPA 1995b
4,4'-DDE	Japanese quail	0.11	3 generations	oral in diet	reproduction	5.00	0.50	USEPA 1995b
4,4'-DDE[c]	barn owl	0.47	2 years	oral in diet	reproduction	0.40	0.08	Blus 1996
4,4'-DDE[b]	mallard	1.00	2 years	oral in diet	reproduction	0.60	0.12	USEPA 1995b
4,4'-DDE[a]	bald eagle	4.74	112 days	oral in diet	survival	3.00	0.30	USEPA 1995b
4,4'-DDT	Japanese quail	0.11	3 generations	oral in diet	reproduction	5.00	0.50	USEPA 1995b
4,4'-DDT[c]	barn owl	0.47	2 years	oral in diet	reproduction	0.40	0.08	Blus 1996
4,4'-DDT[b]	mallard	1.00	2 years	oral in diet	reproduction	1.50	0.60	USEPA 1995b
4,4'-DDT[a]	bald eagle	4.74	112 days	oral in diet	survival	3.00	0.30	USEPA 1995b
alpha-Chlordane	red-winged blackbird	0.064	84 days	oral in diet	survival	10.7	2.14	Sample et al. 1996
alpha-Chlordane[d]	northern bobwhite	0.19	not specified	oral in diet	reproduction	5.95	1.19	Wiemeyer 1996
alpha-Chlordane*	mallard	1.00	not specified	oral in diet	reproduction	4.00	0.80	Wiemeyer 1996
Endosulfan I	gray partridge	0.40	4 weeks	oral in diet	reproduction	50.0	10.0	Sample et al. 1996

Notes:

[a] Used for great blue heron only
[b] Used for Canada goose only
[c] Used for red-tailed hawk only
[d] Used for mourning dove only

Generated By: S.Kent/ATL
Checked By: K.Taylor/DFW

TABLE I-2.3

Exposure Parameters for Upper Trophic Level Ecological Receptors – Step 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Receptor	Body Weight (kg)		Water Ingestion Rate (L/day)		Food Ingestion Rate (kg/day - dry)		Dietary Composition (percent)							Soil/ Sediment Ingestion (percent)	
	Value	Reference	Value	Reference	Value	Reference	Terr. Plants	Soil Invert.	Small Mammals	Fish	Aquatic Plants	Benthic Invert.	Reference	Value	Reference
Birds															
American robin	0.064	USEPA 1993	0.0129	allometric equation	0.0074	Levey and Karasov 1989	51.9	43.5	0	0	0	0	Martin et al. 1951	4.6	Sample and Suter 1994
Barn swallow	0.012	Dunning 1993	0.0052	allometric equation	0.0054	allometric equation	0	0	0	0	0	100	Martin et al. 1951	0	Assumed based on diet
Canada goose	3.31	Dunning 1993	0.1978	allometric equation	0.1679	USEPA 1993a	91.8	0	0	0	0	0	USEPA 1993a	8.2	Beyer et al. 1994
Great blue heron	2.10	Butler 1992	0.1090	allometric equation	0.1356	allometric equation	0	0	0	100	0	0	USEPA 1993a; Quinney and Smith 1980	0	Sample and Suter 1994
Mourning dove	0.105	Tomlinson et al. 1994	0.0175	allometric equation	0.0209	allometric equation	95.0	0	0	0	0	0	Tomlinson et al. 1994	5.0	Assumed based on diet
Red-tailed hawk	0.957	USEPA 1993	0.0680	allometric equation	0.0395	Sample and Suter 1994	0	0	100	0	0	0	USEPA 1993a; Sample and Suter 1994	0	Sample and Suter 1994
Mammals															
Meadow vole	0.030	Silva and Downing 1995	0.0133	USEPA 1993a	0.0031	USEPA 1993a	95.6	2	0	0	0	0	USEPA 1993a	2.4	Beyer et al. 1994
Raccoon	4.23	Silva and Downing 1995	0.6092	allometric equation	0.1307	Conover 1989	0	0	0	7.0	40.0	43.6	USEPA 1993a	9.4	Beyer et al. 1994
Red fox	3.17	Silva and Downing 1995	0.4115	allometric equation	0.1476	Sample and Suter 1994	7.0	2.8	87.4	0	0	0	USEPA 1993a	2.8	Beyer et al. 1994
Short-tailed shrew	0.013	USEPA 1993	0.0048	USEPA 1993a	0.0019	USEPA 1993a	4.7	82.3	0	0	0	0	USEPA 1993a; Sample and Suter 1994	13.0	Sample and Suter 1994
White-footed mouse	0.014	Silva and Downing 1995	0.0092	Sample and Suter 1994	0.0007	Sample and Suter 1994	51.0	47.0	0	0	0	0	Martin et al. 1951; Sample and Suter 1994	2.0	Beyer et al. 1994

Generated By: S.Kent/ATL

Checked By: K.Taylor/DFW

TABLE I-2.4

Soil Bioconcentration Factors For Terrestrial Plants and Soil Invertebrates – Step 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)	
	Value	Reference	Value	Reference
Inorganics				
Cadmium	3.250	Bechtel Jacobs 1998a	40.69	Sample et al. 1998a
Copper	0.625	Bechtel Jacobs 1998a	1.531	Sample et al. 1998a
Lead	0.468	Bechtel Jacobs 1998a	1.522	Sample et al. 1998a
Semivolatile Organics				
Benzo(a)pyrene	0.4212	USEPA 2005	0.34	Beyer and Stafford 1993
Fluoranthene	0.7099	USEPA 2005	0.37	Beyer and Stafford 1993

Generated By: S.Kent/ATL

Checked By: K.Taylor/DFW

TABLE I-2.5
Soil Bioaccumulation Factors For Small Mammals – Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference
Inorganics						
Cadmium	0.462	Sample et al. 1998b	0.448	Sample et al. 1998b	7.017	Sample et al. 1998b
Copper	0.554	Sample et al. 1998b	1.290	Sample et al. 1998b	1.117	Sample et al. 1998b
Lead	0.286	Sample et al. 1998b	0.187	Sample et al. 1998b	0.339	Sample et al. 1998b
Semivolatile Organics						
Benzo(a)pyrene	--	see text	--	see text	--	see text
Fluoranthene	--	see text	--	see text	--	see text

Generated By: S.Kent/ATL
Checked By: K.Taylor/DFW

TABLE I-2.6

Sediment Bioaccumulation Factors For Benthic Invertebrates and Fish – Step 3

Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20

MCB CamLej, Jacksonville, North Carolina

Chemical	Sediment-Invertebrate BAF (dry weight)		Sediment-Fish BAF (dry weight)	
	Value	Reference	Value	Reference
Inorganics				
Cadmium	3.073	Bechtel Jacobs 1998b	0.164	Pascoe et al. 1996
Copper	7.957	Bechtel Jacobs 1998b	0.100	Krantzberg and Boyd 1992
Selenium	1.000	--	1.000	--
Silver	0.180	Hirsch 1998	1.000	--
Zinc	4.759	Bechtel Jacobs 1998b	0.147	Pascoe et al. 1996
Semivolatile Organics				
Acenaphthylene	2.040	Acenaphthene value	1.000	--
Anthracene	0.271	Maruya et al. 1997	1.000	--
Benzo(a)anthracene	1.400	Maruya et al. 1997	1.000	--
Benzo(a)pyrene	0.191	Maruya et al. 1997	1.000	--
Benzo(b)fluoranthene	0.160	Maruya et al. 1997	1.000	--
Benzo(g,h,i)perylene	0.295	Maruya et al. 1997	1.000	--
Benzo(k)fluoranthene	0.421	Maruya et al. 1997	1.000	--
Chrysene	0.335	Maruya et al. 1997	1.000	--
Dibenz(a,h)anthracene	0.271	Anthracene value	1.000	--
Fluoranthene	0.312	Maruya et al. 1997	1.000	--
Indeno(1,2,3-cd)pyrene	0.355	Maruya et al. 1997	1.000	--
Phenanthrene	0.652	Maruya et al. 1997	1.000	--
Pyrene	0.803	Maruya et al. 1997	1.000	--
Pesticides/PCBs				
4,4'-DDD	0.350	Oliver and Niimi 1988	2.250	Oliver and Niimi 1988
4,4'-DDE	3.360	Oliver and Niimi 1988	26.20	Oliver and Niimi 1988
4,4'-DDT	2.280	Oliver and Niimi 1988	8.800	Oliver and Niimi 1988
alpha-Chlordane	1.000	--	1.000	--
Endosulfan I	1.000	--	1.000	--

Generated By: S.Kent/ATL

Checked By: K.Taylor/DFW

TABLE I-2.7
Sediment Bioaccumulation Factors For Aquatic Plants – Step 3
Expanded Supplemental Remedial Investigation Site 86—Operable Unit No. 20
MCB CamLej, Jacksonville, North Carolina

Chemical	Sediment-Plant BCF (dry weight)	
	Value	**Reference**
Inorganics		
Cadmium	3.250	Bechtel Jacobs 1998a
Copper	0.625	Bechtel Jacobs 1998a
Selenium	3.012	Bechtel Jacobs 1998a
Silver	0.037	Bechtel Jacobs 1998a
Zinc	1.820	Bechtel Jacobs 1998a
Pesticides/PCBs		
4,4'-DDD	0.4234	USEPA 2005
4,4'-DDE	0.2990	USEPA 2005
4,4'-DDT	0.3375	USEPA 2005
alpha-Chlordane	0.3771	USEPA 2005
Endosulfan I	1.4016	USEPA 2005
Semivolatile Organics		
Acenaphthylene	1.2156	USEPA 2005
Anthracene	0.9588	USEPA 2005
Benzo(a)anthracene	0.5229	USEPA 2005
Benzo(a)pyrene	0.4212	USEPA 2005
Benzo(b)fluoranthene	0.4017	USEPA 2005
Benzo(g,h,i)perylene	0.3086	USEPA 2005
Benzo(k)fluoranthene	0.4017	USEPA 2005
Chrysene	0.5229	USEPA 2005
Dibenz(a,h)anthracene	0.3102	USEPA 2005
Fluoranthene	0.7099	USEPA 2005
Indeno(1,2,3-cd)pyrene	0.3168	USEPA 2005
Phenanthrene	0.9588	USEPA 2005
Pyrene	0.7137	USEPA 2005

Generated By: S.Kent/ATL
Checked By: K.Taylor/DFW

Appendix J
MODFLOW Modeling

Appendix J

Development of Groundwater Flow and Transport Model
Site 86—Operable Unit No. 20

Marine Corps Base Camp Lejeune
Jacksonville, North Carolina

Contract Task Order 081

July 2010

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Under the

NAVFAC CLEAN III Program
Contract N62470-08-D-1000

Prepared by

CH2MHILL

Charlotte, North Carolina

Contents

Acronyms and Abbreviations ..... **v**

1 Introduction **1-1**
1.1 Modeling Objectives 1-1
1.1.1 Near-Term Objectives 1-1
1.1.2 Potential Midterm Objectives 1-2
1.1.3 Potential Long-Term Objectives 1-2
1.2 Methodology Overview 1-2

2 Computer Code Descriptions **2-1**

3 Numerical Model Construction **3-1**
3.1 Model Domain 3-1
3.1.1 Areal Characteristics of Model Grid 3-1
3.1.2 Vertical Characteristics of Model Grid 3-1
3.2 Topography 3-2
3.3 Subsurface Hydraulic Parameters 3-2
3.4 Model Time Discretization 3-2
3.5 Boundary Conditions 3-2
3.5.1 Areal Groundwater Recharge Specified-flux Boundary 3-3
3.5.2 Head-Dependent Flux Boundaries 3-3
3.5.3 No-Flow Boundaries 3-3

4 Model Calibration Process and Results **4-1**
4.1 Calibration Process 4-1
4.1.1 Selection of Calibration Targets 4-1
4.1.2 Calibration Procedure 4-2
4.2 Calibration Results 4-3
4.2.1 Groundwater Elevations 4-3
4.2.2 Groundwater Flow Directions 4-4
4.2.3 Calibrated Hydraulic Parameters 4-4
4.2.4 Parameter Sensitivity 4-4
4.2.5 Groundwater Budget 4-4
4.3 Calibration Outcome 4-5

5 Model Application **5-1**
5.1 Solute Transport Methodology 5-1
5.1.1 Solute Transport Formulation 5-1
5.1.2 Soil-Specific Transport Properties 5-1
5.1.3 Solute-Specific Transport Properties 5-2
5.1.4 Initial Solute Conditions 5-3
5.2 Results 5-3

6 Model Limitations **6-1**
6.1 Limitations 6-1

6.2 Potential Sources of Error 6-1
6.2.1 Transient Effects 6-2
6.2.2 Human Errors 6-2
6.2.3 Scaling Effects 6-2
6.2.4 Interpolation Effects 6-3
6.2.5 Numerical Errors 6-3

7 Works Cited 7-1

Tables (Tables are located at the end of their respective sections.)

J3-1 Model Layer Definitions
J3-2 Summary of Boundary Conditions Used During Calibration

J4-1 Comparison of Simulated and Target Heads
J4-2 Comparison of Simulated and Target Head Differences
J4-3 Modeled 2010 Steady-State Groundwater Budget

J5-1 Summary of Transport Parameter Values Used in Predictive Simulations

Figures (Figures are located at the end of their respective sections.)

J1-1 Site Map

J3-1 Model Domain and Boundary Conditions
J3-2 Model Layers Along Cross Section A-A′
J3-3 Modeled Land Surface Elevation

J4-1 Calibration Target Locations
J4-2 Simulated Versus Calibration Target Heads
J4-3 Spatial Distribution of Residual Error in Simulated Heads
J4-4 Spatial Distribution of Simulated Head
J4-5 Distribution of Modeled Horizontal Hydraulic Conductivity
J4-6 Distribution of Modeled Vertical Hydraulic Conductivity
J4-7 Modeled Recharge from Precipitation and Evapotranspiration of Shallow Groundwater

J5-1 Initial Modeled TCE Concentrations
J5-2 Initial Modeled Vinyl Chloride Concentrations
J5-3 Simulated TCE and Vinyl Chloride Plume Footprints
J5-4 Simulated TCE Chemographs
J5-5 Simulated VC Chemographs

Acronyms and Abbreviations

3D	three-dimensional
α	dual-domain mass transfer coefficient
µg/L	micrograms per liter
CSM	conceptual site model
DaI	Type I Damköhler Number
DDMT	dual-domain mass transfer
DEM	digital elevation model
DRN	drain package of MODFLOW-2000
ESRI	Expanded Supplemental Remedial Investigation
ET	evapotranspiration
f_{oc}	fraction of organic carbon
ft	feet
ft bgs	feet below ground surface
ft/day	feet per day
ft msl	feet above mean sea level
g/cm^3	grams per cubic centimeter
GFM	groundwater flow model
GIS	geographic information system
gpm	gallons per minute
in/yr	inches per year
K_d	solute distribution coefficient
Kh	horizontal hydraulic conductivity
K_{oc}	soil organic carbon–water partitioning coefficient
Kv	vertical hydraulic conductivity
L	solute plume length
MCL	maximum contaminant level
ME	mean error
MF2K	MODFLOW-2000
mi^2	square mile
µg/L	micrograms per liter
mL/g	milliliters per gram
n	number of observations
NCGWQS	North Carolina Groundwater Quality Standard
R^2	coefficient of determination

RIV	river package of MODFLOW-2000
RMSE	root mean squared error
RMSE/range	RMSE divided by the range of calibration-target head values
RSL	regional screening level
ρ_b	bulk density
ρ_s	grain density
TCE	tricholoethene
θ_{im}	immobile porosity
θ_m	mobile porosity
θ_t	total porosity
USGS	United States Geological Survey
VC	vinyl chloride
V_s	solute velocity

SECTION 1

Introduction

This report documents the development and application of a numerical groundwater flow and transport model that simulates steady-state groundwater flow beneath Site 86–Operable Unit No. 20 of Marine Corps Base Camp Lejeune (MCB CamLej), located in Onslow County, North Carolina (**Figure J1-1)**; tables and figures are located at the end of their respective sections. The Site 86 Groundwater Flow Model (GFM) was developed as a screening-level tool to gain insight into the basic groundwater hydraulics and potential movement of solutes at the Site. The GFM also provides a means for testing hypotheses related to the physical properties of the aquifer, subsurface solute conditions, and other components of the conceptual site model (CSM). This tool is at an early stage of development, and the availability of site-specific data to help constrain subsurface flow and transport processes is limited. As site-specific data become available and knowledge of the Site and project needs evolve, the Site 86 GFM could be periodically updated to improve its predictive capabilities and ability to help inform Site management decision makers.

Information presented in this report generally complies with the guidelines described in the *Standard Guide for Documenting a Ground-Water Flow Model Application* (American Society for Testing and Materials, 1996a).

1.1 Modeling Objectives

The objectives for developing the Site 86 GFM are subdivided into three categories: near-term objectives, potential midterm objectives, and potential long-term objectives.

1.1.1 Near-Term Objectives

The Site 86 GFM was designed to enhance the understanding of the three-dimensional (3D) groundwater flow system and the movement of solutes through the subsurface. This model simulates steady-state groundwater flow and the transport of trichloroethene (TCE) and vinyl chloride (VC) through the steady-state groundwater flow system underlying Site 86. The Site 86 GFM was designed to meet the following near-term objectives:

- Support development of the Site 86 Expanded Supplemental Remedial Investigation (ESRI) by integrating the Site 86 CSM, with respect to local hydrostratigraphy, groundwater elevations, current distribution of TCE and VC, and estimated subsurface hydraulic characteristics, into a numerical tool to better understand groundwater flow and potential transport of TCE and VC
- Provide a tool for hypothesis testing to gain a better understanding of the physical system and its relation to the migration of solutes
- Estimate whether TCE and VC will reach the New River and if so, assess both the timeframe and magnitude of concentrations that might occur

1.1.2 Potential Midterm Objectives

In addition to providing supporting calculations for the Site 86 ESRI, the Site 86 GFM should be periodically updated to further support decisions related to Site management. In doing so, the objectives and predictive capabilities of the model will evolve as knowledge of the Site and project needs evolve. Examples of potential midterm objectives include, but are not limited to, the following:

- Aid in evaluations of alternatives for feasibility studies
- Aid in development of the proposed plan and record of decision
- Aid in the planning and implementation stages of the remedial design
- Refine estimates of remediation timeframes
- Use model output to facilitate preparation of summary graphics to improve the transfer of technical information to project stakeholders and the general public
- Identify data gaps that, once filled, would improve the CSM and the ability to make effective Site management decisions

1.1.3 Potential Long-Term Objectives

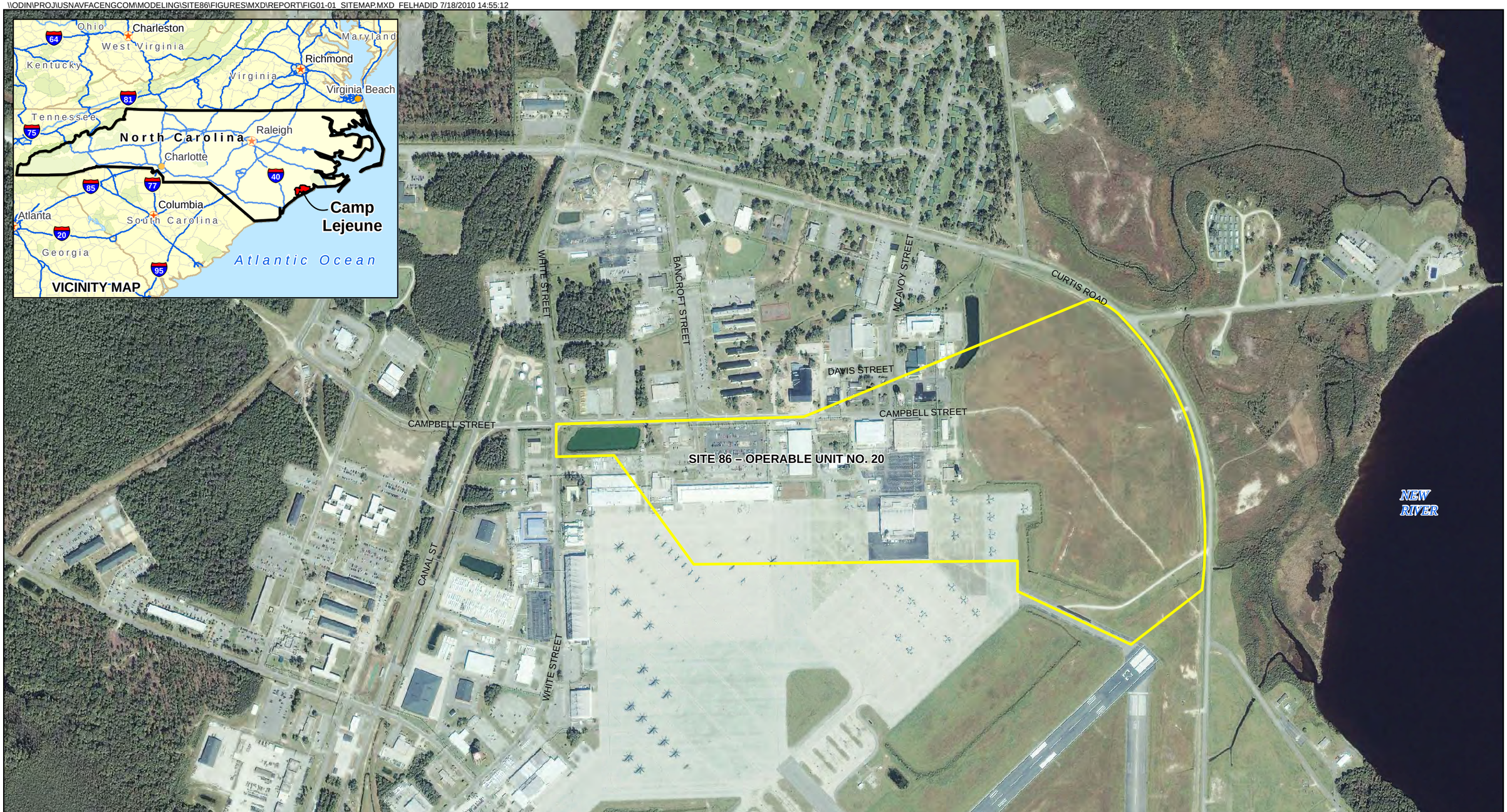
To the extent that the Site 86 GFM is periodically updated and used, potential long-term objectives could also include the following:

- Aid in remediation system performance evaluations
- Aid in 5-year reviews
- Aid in remedial process optimization to reduce remediation timeframe and associated life-cycle costs

1.2 Methodology Overview

To fulfill the near-term modeling objectives, the Site 86 GFM was developed and calibrated using March 2010 input data. This was done to demonstrate the model's ability to replicate hydrologic system behavior using recent data that describe climate, land and water use, and hydrogeology. Following calibration, the model was used for predictive analyses to fulfill the near-term modeling objectives.

\\ODIN\PROJ\USNAVFACENGCOM\MODELING\SITE86\FIGURES\MXD\REPORT\FIG01-01_SITEMAP.MXD FELHADID 7/18/2010 14:55:12



NOTE: DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

LEGEND

MARCH 2010 SITE 86 BOUNDARY

N

0 350 700 1,400 Feet

1 inch = 700 feet

Figure J1-1
Site Map
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

SECTION 2

Computer Code Descriptions

The Site 86 GFM was developed with the MODFLOW-2000 (MF2K) code (Harbaugh et al., 2000) to solve the groundwater flow equations and establish a set of steady-state groundwater elevations and associated fluxes. The MF2K code simulates single-density, 3D groundwater flow through porous media using the finite-difference method (McDonald and Harbaugh, 1988). This code expands upon the modularization approach that was originally included in MODFLOW (McDonald and Harbaugh, 1988).

As with previous versions of MODFLOW, the MF2K code requires consistent length and time units. The Site 86 GFM was developed with input data expressed in length and time units of meters and days, respectively. This was done to maintain consistent coordinate systems between the Site 86 GFM and the MCB CamLej geographic information system (GIS) database, which are both based in Zone 12 North of the Universal Transverse Mercator system, 1983 North American Datum.

The MT3DMS code (Zheng and Wang, 1999) was used in conjunction with MF2K to simulate the transport of TCE and VC beneath Site 86. The modeling process includes running MF2K to establish a 3D representation of a groundwater flow system, followed by running MT3DMS to retrieve the necessary hydraulic results from MF2K and solving the governing solute transport equations necessary to simulate solute transport. Thus, both MF2K and MT3DMS are required to simulate solute transport.

The MF2K and MT3DMS codes were selected for the following reasons:

- MF2K and MT3DMS have been benchmarked and verified, meaning that the numerical solutions generated by the codes have been compared with one or more analytical solutions, subject to scientific review, and are in wide use. Verification of the codes ensures that MF2K and MT3DMS can accurately solve the governing equations that constitute the mathematical models.
- Both codes are products of decades of development and are industry standards.
- CH2M HILL has experience using both codes for numerous project sites worldwide.

A more complete description of these modeling codes is available in their respective user guides.

The Site 86 GFM and transport models were developed with the aid of the pre- and postprocessing software named Groundwater Vistas, version 5.0 (Environmental Simulations Inc., 2007).[1]

[1] http://www.groundwater-vistas.com/.

SECTION 3

Numerical Model Construction

The mathematical model design is the result of translating the CSM into a form that is suitable for numerical modeling. The following steps were included in the development of the mathematical model design:

1. Establishing study area boundaries (i.e., model domain) and developing a model grid
2. Spatially distributing land surface elevation values
3. Spatially distributing subsurface hydraulic parameter values
4. Selecting a time discretization approach appropriate for evaluating the field problem and fulfilling the near-term modeling objectives (Section 1.1.1)
5. Establishing boundary conditions for flow (i.e., water budget terms through time)

The following subsections describe the results of these five design steps.

3.1 Model Domain

In the real world, space is continuous, but a numerical model must use discrete space to represent the hydrologic system. The simplest way to discretize space is to subdivide the study area into many subregions (i.e., grid blocks) of uniform size. This was the approach taken for development of the Site 86 GFM grid.

3.1.1 Areal Characteristics of Model Grid

The Site 86 GFM grid mathematically represents a roughly 11-square-mile (mi^2) area surrounding Site 86. This grid is areally discretized into 268 columns and 270 rows, with uniform lateral grid-block (i.e., cell) spacing on approximately 100-foot (30-m) centers, as illustrated on **Figure J3-1**. The Site 86 GFM grid consists of 32,127 active cells per model layer, for a total of 289,143 active cells. The locations of the lateral Site 86 GFM domain boundaries were selected to take advantage of natural hydrologic divides and strike a balance between minimal model runtimes and minimal adverse boundary effects on the model solution.

3.1.2 Vertical Characteristics of Model Grid

The Site 86 GFM is vertically stacked into nine layers to provide a 3D representation of the subsurface system. The physical representation of each model layer differs, depending on location. **Table J3-1** lists the model layer designations along with their general characteristics. **Figure J3-2** depicts a generalized cross section through the model domain to illustrate the model layering.

3.2 Topography

Digital elevation model (DEM) data obtained from the National Elevation Dataset[2] form the basis for land surface elevations in the Site 86 GFM. The 3-m DEM data are the best available for land surface elevations covering the study domain. These land surface elevations were assigned to the top of Model Layer 1. Elevation data were processed with the aid of both ArcGIS, version 9.3,[3] and Surfer, version 9.0.[4] **Figure J3-3** shows the modeled land surface elevations in the Site 86 GFM, which range from approximately 0 to 60 feet above mean sea level (ft msl).

3.3 Subsurface Hydraulic Parameters

The hydraulic parameters in the Site 86 GFM were initially assigned using available and relevant field data and information from previous site-characterization efforts. Subsurface hydraulic properties required by MF2K for a steady-state solution include the horizontal and vertical hydraulic conductivity (Kh and Kv, respectively).

Data resulting from slug tests and professional judgment were the basis for the starting Kh and Kv values in the model. The initial Kh values used during model development ranged from 0.5 to 40 ft/day; however, these initial values were modified during the calibration process (Section 4).

The Kv values were initially assigned according to an assumption of a ratio of Kh and Kv (i.e., vertical anisotropy or Kh:Kv) of 10 for each model layer. Thus, Kv was parameterized on a cell-by-cell basis by dividing Kh by a value of 10. However, these initial values were also modified during the calibration process (Section 4).

3.4 Model Time Discretization

Time is continuous in the physical system, but a numerical model must describe the field problem at discrete time intervals. As previously discussed, the Site 86 GFM was set up to simulate steady-state flow conditions, reflective of March 2010 conditions. As such, the hydraulics associated with the modeled groundwater flow system did not change through time.

3.5 Boundary Conditions

Boundary conditions are mathematical statements (i.e., rules) that specify water levels and flux at particular locations within the model domain. The following three types of boundary conditions were used with the Site 86 GFM:

- **Specified-flux:** Groundwater flux is specified.
- **Head-dependent flux:** Given water level or conductance values, groundwater flux is internally computed across the boundary using an appropriate flow equation.

---

[2] http://ned.usgs.gov/

[3] http://esri.com/software/arcgis/index.html.

[4] http://goldensoftware.com/products/surfer/surfer.shtml

- **No-flow:** Groundwater can flow parallel to the boundary but not across it.

Figure J3-1 and **Table J3-2** summarize the boundary conditions selected for the Site 86 GFM.

3.5.1 Areal Groundwater Recharge Specified-flux Boundary

The areal groundwater recharge term applied to Model Layer 1 represents groundwater recharge from precipitation. Precipitation rates for this area were obtained from the National Oceanic and Atmospheric Administration meteorological station at the Wilmington, North Carolina, airport, which is approximately 40 miles from Site 86. The groundwater recharge from applied water was assumed to be negligible. An areal recharge value of 22 inches per year (in/yr), or about 40 percent of the average annual precipitation as measured at the Wilmington airport, was initially assigned in the model but was revised as part of the calibration process (discussed in Section 4).

3.5.2 Head-Dependent Flux Boundaries

3.5.2.1 Evapotranspiration of Shallow Groundwater

A maximum rate of evapotranspiration (ET) of shallow groundwater of 16 in/yr was initially assigned in the model, along with a rooting depth of 3 ft below ground surface (bgs). Maximum ET of shallow groundwater occurs when the simulated groundwater table in Model Layer 1 is at the land surface elevation. The rate of ET of shallow groundwater decreases with a decreasing groundwater table in Model Layer 1 within the rooting depth. Thus, the rooting depth represents the depth to which water can be extracted from the ground by plant roots in the subsurface; consequently, ET can only occur within the upper 3 ft of the Site 86 GFM.

3.5.2.2 Streams and Drainages

The New River flows through the study area toward the Atlantic Ocean (see **Figures J1-1** and J**3-1**) and was simulated using the river package (RIV) of MF2K. For RIV, river stage and a streambed Kv, which limits the water exchange between the river and groundwater in Model Layer 1, are input. River stage was set at 0 ft msl in the New River. The streambed Kv was set initially at 33 ft/day. This relatively high Kv was set initially to facilitate hydraulic connection between the river and the aquifer.

Other streams included in the model are Brinson Creek, which bounds the model on the northeast, and Tank and Southwest Creeks, which form the southwestern model boundary. Both of these streams were also simulated using the RIV of MF2K. For these streams, the river stage was set equal to the ground surface elevation and the streambed Kv was set at 33 ft/day.

The drain package (DRN) of MF2K was applied to all active cells in Model Layer 1 that were not already assigned to RIV. DRN removes excess water that would otherwise flood a cell and simulates the process of groundwater discharge to the land surface (other than streams). **Figure J3-1** shows the location of DRN cells.

3.5.3 No-Flow Boundaries

The northwestern boundary of the model and the southwestern boundary upstream of the headwaters of Tank Creek in all model layers were simulated as no-flow boundaries. These areas mark locations of natural surface water divides. Likewise, the bottom of Model

Layer 9 was also simulated as a no-flow boundary, which implies that groundwater below an elevation of about -200 ft msl (see cross section of model layers in **Figure J3-2**) does not interact with groundwater in the aquifer zones of interest beneath Site 86. As knowledge of the groundwater system improves, the validity of the no-flow boundaries can be reassessed, if necessary. These lateral boundaries are located far from the Site and its immediate vicinity. **Figure J3-1** shows the locations of no-flow cells.

TABLE J3-1
Model Layer Definitions
Development of the Site 86 Groundwater Flow and Transport Model

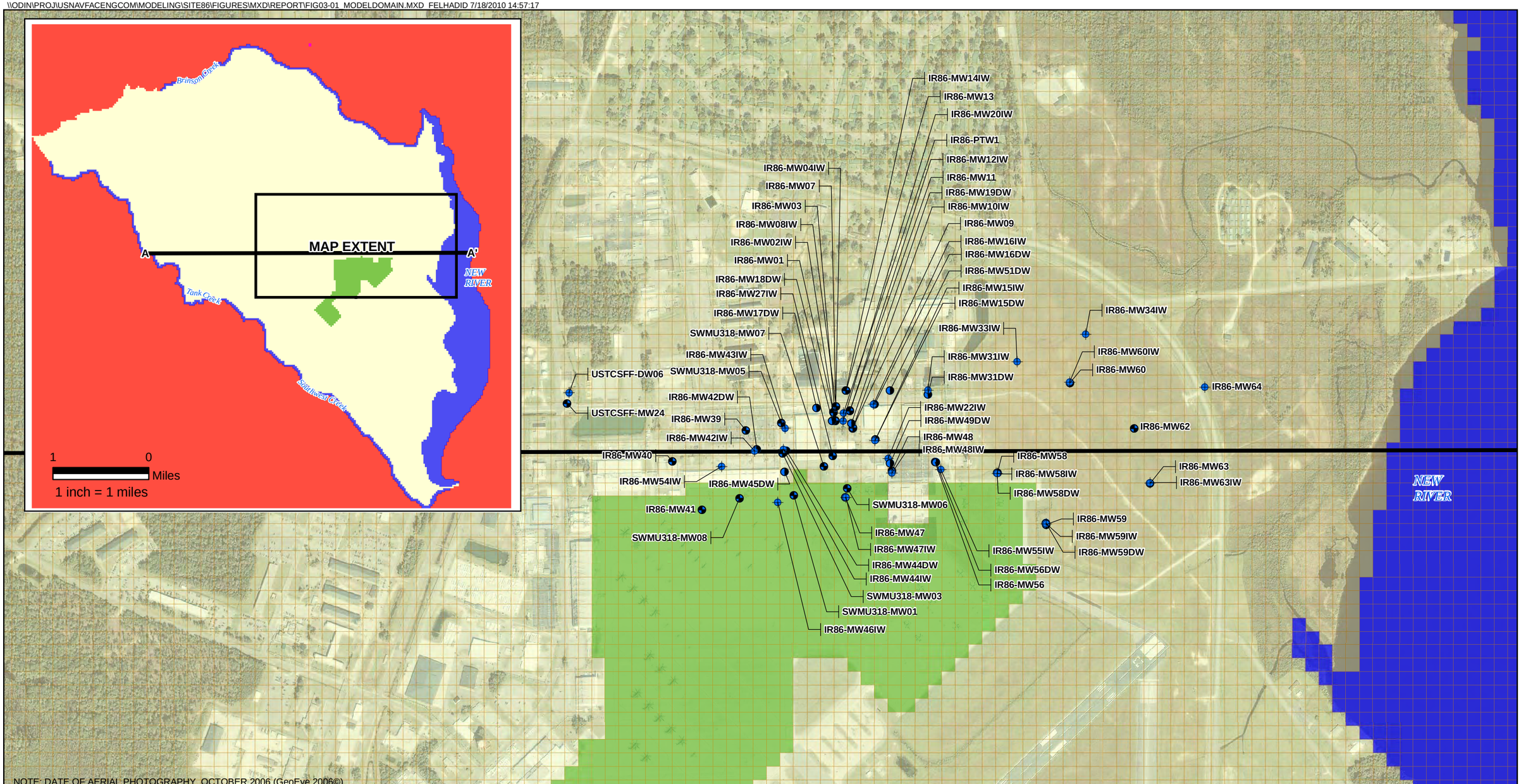
Model Layer	Description	Approximate Modeled Thickness (ft)[a]
1	Surficial Aquifer	< 1 to 60
2	Surficial Aquifer	3 to 20
3	Upper Castle Hayne Aquifer	20
4	Upper Castle Hayne Aquifer	11
5	Middle Castle Hayne Aquifer	5
6	Middle Castle Hayne Aquifer	7
7	Middle Castle Hayne Aquifer	20
8	Middle Castle Hayne Aquifer	13
9	Lower Castle Hayne Aquifer	102

[a]Values represent range over entire model domain, not just beneath Site 86.

TABLE J3-2
Summary of Boundary Conditions Used During Calibration
Development of the Site 86 Groundwater Flow and Transport Model

Hydrologic Process	Specified-flux Boundary	Head-dependent Flux Boundary
Areal Groundwater Recharge	X	—
Groundwater Recharge from Streams	—	X
Evapotranspiration of Shallow Groundwater	—	X
Groundwater Discharge to Streams	—	X
Groundwater Discharge to Drains	—	X

Notes:
Figure J3-1 depicts the assignment of boundary conditions in the Site 86 GFM.



NOTE: DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER
- LOCATION OF CROSS SECTION
- MODEL GRID

BOUNDARY CONDITIONS

- DRAIN, ET OF SHALLOW GROUNDWATER, AND GROUNDWATER RECHARGE FROM PRECIPITATION
- DRAIN
- RIVER
- NO FLOW

N

0 350 700 1,400 Feet

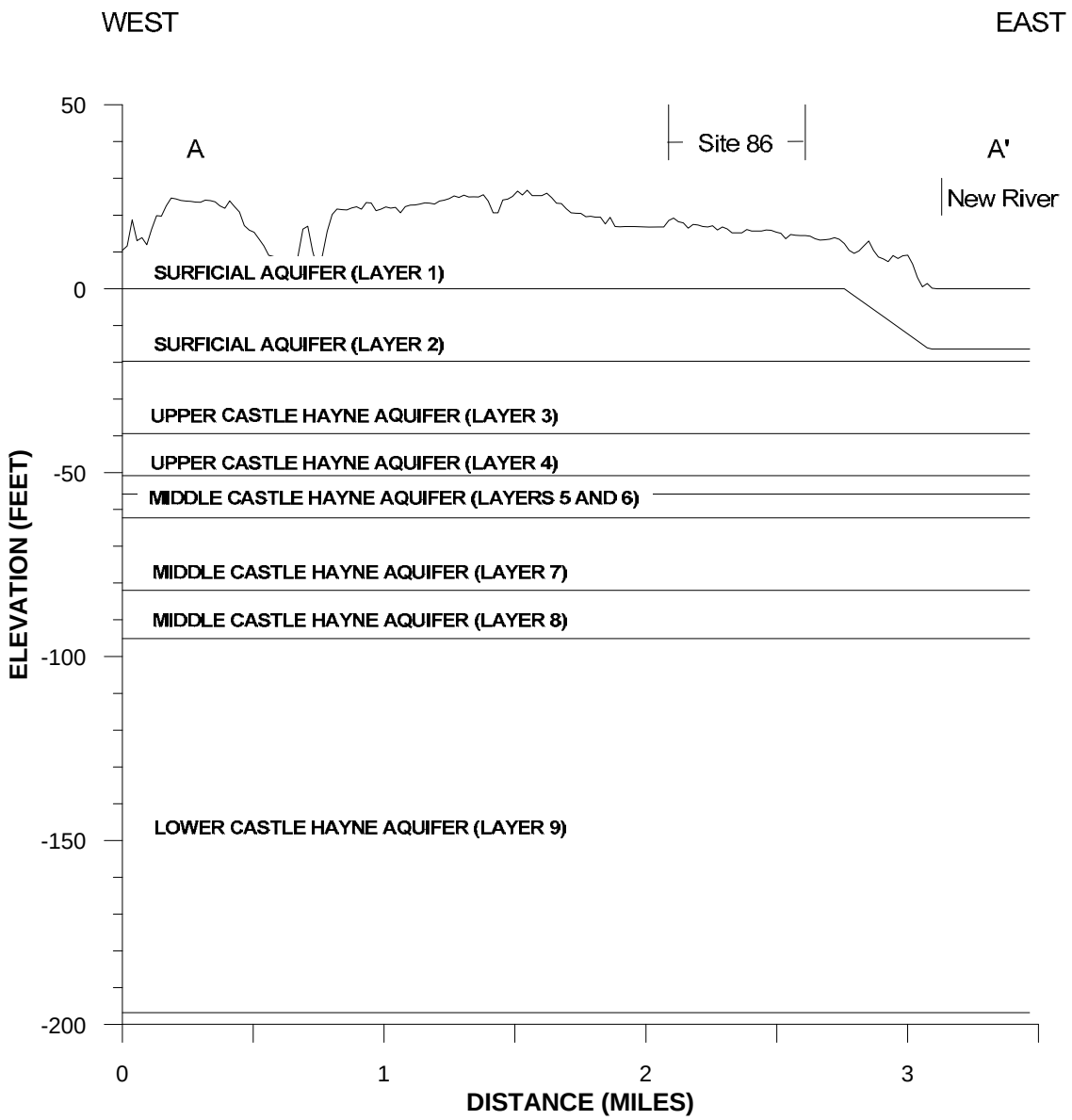
1 inch = 700 feet

Figure J3-1
Model Domain and Boundary Conditions
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

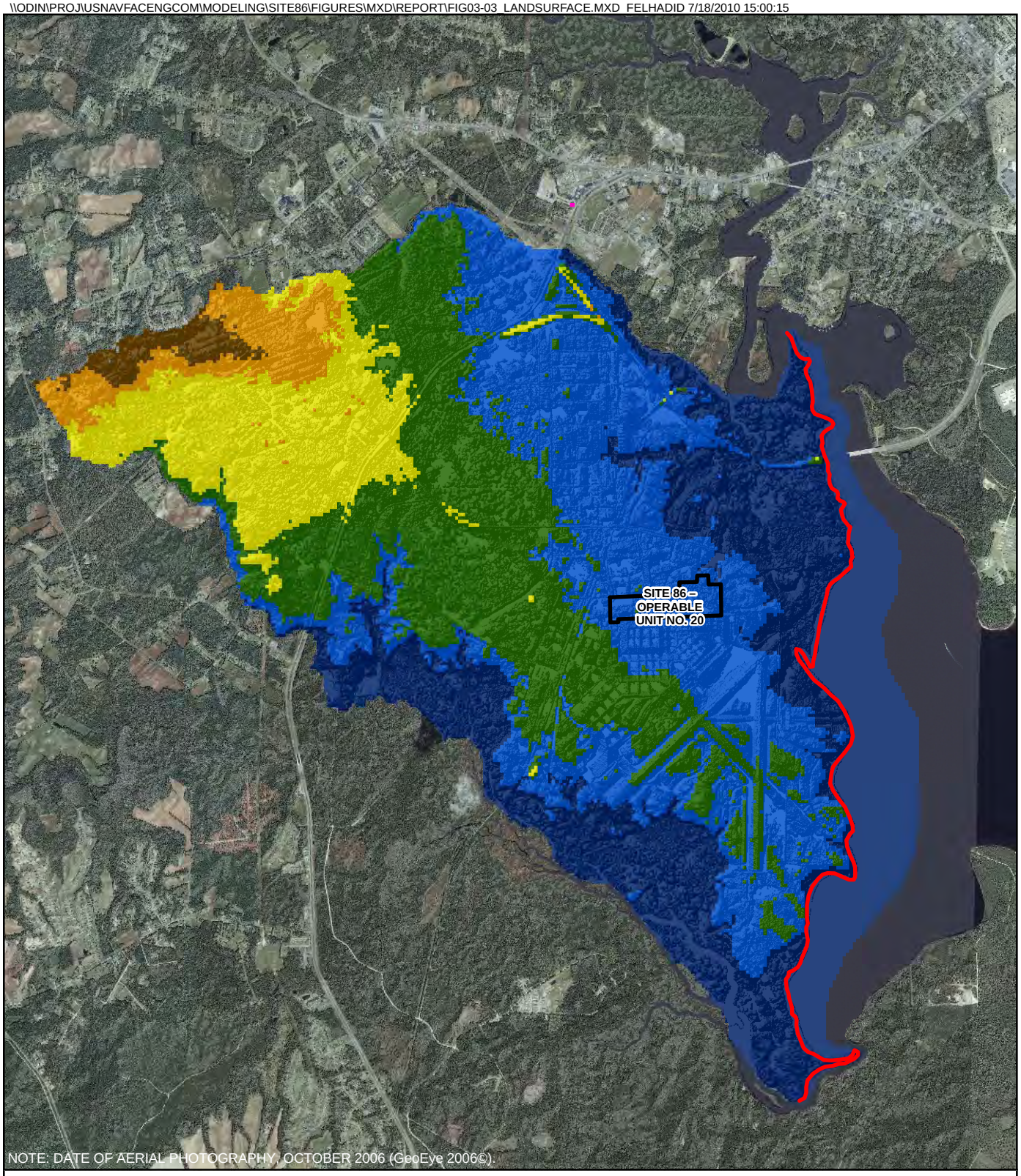
Fig03-02_XSection.grf



LOCATION OF CROSS SECTION SHOWN ON FIGURE J3-1.

Figure J3-2
Model Layers Along Cross Section A-A'
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

NEW RIVER SHORELINE

LAND SURFACE ELEVATION (FEET MSL)

- 60 to 50
- 50 to 40
- 40 to 30
- 30 to 20
- 20 to 10
- 10 to 0

N

0 2,000 4,000 8,000 Feet

1 inch = 4,000 feet

Figure J3-3
Modeled Land Surface Elevation
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

SECTION 4

Model Calibration Process and Results

Model calibration is a process of tuning a numerical model to simulate observed subsurface flow conditions in the field, as described with measured data, to within a reasonable degree of accuracy. The Site 86 GFM was calibrated in accordance with the *Standard Guide for Calibrating a Ground-Water Flow Model Application*, published by the American Society for Testing and Materials (1996b).

4.1 Calibration Process

CH2M HILL incorporated as many details of the physical system into the Site 86 GFM as possible, given the limited available data. A stepwise calibration approach was implemented to achieve sufficient calibration. This approach included a combination of both manual and autocalibration techniques, as described below.

4.1.1 Selection of Calibration Targets

Calibration targets are defined as the selected field-measured values that quantify hydrologic conditions of interest with consideration of data quality and worth. Both qualitative and quantitative calibration targets were selected to evaluate the progress of calibration during development of the model. Following is a discussion related to how the averaging period for the calibration target data was selected for the steady-state flow calibration, followed by a discussion related to the specific quantitative and qualitative calibration targets selected for this effort.

4.1.1.1 Averaging Period for Steady-State Flow

As previously stated, data from March 2010 were selected as calibration targets based on availability of field-measured groundwater levels (i.e., heads). Thus, the averaging period was simply the March 2010 timeframe when groundwater levels were measured.

CH2M HILL selected both quantitative and qualitative calibration targets for the subsurface flow of water in GFM after examining the limited available data and relevant observations and considering data quality. Quantitative and qualitative calibration targets were evaluated as follows.

4.1.1.2 Quantitative Calibration Targets

Selected field-measured heads from March 2010 served as calibration-target heads. Calibration summary statistics were computed to provide a quantitative measure of the ability of the model to replicate calibration-target heads. Head calibration was evaluated using a variety of summary statistics, including the following:

- Residual error, computed as the simulated head value minus the calibration-target head value
- Mean error (ME), computed as the sum of all residual errors divided by the number of observations (n)

- Coefficient of determination (R^2), computed as the square of the correlation coefficient
- Root mean squared error (RMSE), computed as the square root of the mean of all residual squared errors
- RMSE divided by the range of calibration-target head values (RMSE/range)

Rather than setting arbitrary goals for individual summary statistics as part of quantitative calibration, CH2M HILL moved forward with the following general goals:

- To minimize residual error and ME, RMSE, and RMSE/range values
- To have R^2 values as close to 1.00 as possible

Figure J4-1 depicts the 67 locations of the quantitative calibration targets used to help calibrate the Site 86 GFM.

4.1.1.3 Qualitative Calibration Targets

Qualitative calibration targets refer to general observations of the field problem that were compared with model output. These qualitative targets include six locations where vertical head differences were compared with modeled results (**Figure J4-1**). General groundwater flow directions were also considered qualitative calibration targets. Vertical-head-difference well pairs were selected if the wells were spaced within 10 feet of each other but screened in different depth intervals represented by different model layers. Calibration summary statistics were not used to quantify the ability of the model to replicate qualitative calibration targets values or observations.

4.1.2 Calibration Procedure

The general calibration procedure consisted of three phases. The first phase was initial manual calibration, which focused on defining locations with field-derived property values and establishing approximate hydraulic values that resulted in a reasonably close match to both quantitative and qualitative targets. The second phase implemented autocalibration techniques; numerical optimization software was employed to obtain the best fit to the quantitative calibration targets. The third phase involved interpreting the autocalibration results with respect to the quantitative and qualitative calibration targets and modifying parameter values to provide a better match to the CSM.

4.1.2.1 Calibration Parameters

Parameter values of Kh, Kv, maximum ET rates and extinction depths, and areal groundwater recharge rates were adjusted during the calibration of the Site 86 GFM.

4.1.2.2 Initial Manual Calibration Phase

During the first calibration phase, property zones were spatially defined and assigned values using a manual interactive technique. This involved manually running the simulations, comparing model results with qualitative and quantitative calibration targets to assess the progress of calibration, and making manual changes to parameter values and boundary conditions in areas where important calibration mismatches were noted for the next round of simulations. This procedure was repeated until only minor improvements in calibration were achieved with each round of simulations.

4.1.2.3 Autocalibration Phase

Parameter values and boundary conditions estimated during the first calibration phase were then adjusted with the aid of PEST (Doherty, 2004, 2007) autocalibration software. PEST uses a process of parameter modification and calibration target matching that is similar to the manual interactive technique used by a groundwater modeler, but PEST has the advantage of being able to perform and analyze hundreds (or even thousands) of model runs over a short time, depending on model runtimes. Although PEST cannot exercise professional judgment, it can be guided by a professional who is familiar with the site and software.

4.1.2.4 Final Calibration Phase

Model output from PEST represents the best fit to the quantitative calibration targets. However, it is often necessary to modify the parameter values resulting from the autocalibration process in a way that takes advantage of the progress made by PEST but better honors the CSM. The product resulting from this calibration procedure is a groundwater flow model that takes advantage of numerical parameter estimation, professional judgment, and the experience of engineers and scientists familiar with the site.

4.2 Calibration Results

4.2.1 Groundwater Elevations

Locations of the calibration-target wells selected for this evaluation are depicted in **Figure J4-1**. The target and simulated heads, along with their residual errors, are listed in **Table J4-1**. The purpose of computing summary statistics is to quantify the goodness-of-fit between simulated and target head data. Goodness-of-fit statistics that accompany model calibration are not necessarily good indicators of the predictive capabilities of a model. Summary statistics are highly sensitive to the number of observations, quality of measured data, and outlier data. Poor calibration statistics can result from a variety of reasons, as described in Section 6.2.

Figure J4-2 is a scatter plot of simulated versus target head data. The summary statistics for data presented in **Figure J4-2** and defined in Section 4.1.1.2 are as follows:

- ME = -0.40 ft
- RMSE = 0.86 ft
- Range in calibration target head values = 10.86 ft
- RMSE/range = 7.9 percent
- R^2 = 0.93
- n = 67

The ME value of -0.40 ft indicates that the model slightly underpredicted heads throughout the model domain as a whole, as shown by the slightly negative value. However, considering that the target heads vary by more than 10 ft over the domain, ME, RMSE, and RMSE/range are small. A well-calibrated model should also have mostly low residuals, with some simulated heads occurring above or below their target heads. **Figure J4-2** shows that points fall both above and below the 1:1 correlation line. However, there tend to be more values that fall below the perfect-fit line, indicating a slight bias toward underpredicting heads.

Figure J4-3 illustrates the spatial distribution of the residual errors in simulated heads that are listed in **Table J4-1**. With the exception of simulated heads in Model Layer 7 (Middle Castle Haine Aquifer) that are generally too low, **Figure J4-3** does not indicate significant spatial bias in residual errors by model layer. This is evidenced by both positive and negative residual errors in most model layers for which there are calibration-target heads.

The target and simulated vertical-head-difference values, along with their residual errors, are listed in **Table J4-2**. The model struggles to match vertical head differences. Calibration to vertical head difference would be better constrained if data were available from multidepth aquifer tests; however, such data are not currently available.

4.2.2 Groundwater Flow Directions

Figure J4-4 depicts simulated groundwater flow directions that are representative of March 2010 conditions. The simulated head contours are illustrated at a contour interval of 0.5 ft, by model layer. The general easterly flow directions appear reasonable and generally consistent with the CSM.

4.2.3 Calibrated Hydraulic Parameters

Figure J4-5 depicts the modeled Kh values that resulted from the calibration process. These values are generally in good agreement with estimates derived from aquifer testing at IR86-PTW-1 and the slug testing location shown in **Figure J4-5**. Maps of the modeled Kv values are presented in **Figure J4-6**. The Kh and Kv values are within the range of literature values for the materials present in Site boreholes. As previously discussed, calibration of hydraulic parameters would be better constrained if additional multidepth aquifer testing was performed, particularly between the Site and the New River.

Figure J4-7 shows the calibrated recharge and maximum ET rates. A constant value was used for each of these parameters across the model domain, except for the flightline area, which had a value of 0 in/yr for both.

4.2.4 Parameter Sensitivity

A traditional sensitivity analysis was not conducted during the development of the Site 86 GFM; however, PEST rigorously computes parameter sensitivities automatically, internally. According to PEST, the most sensitive parameters include groundwater recharge from precipitation, the westernmost Kh zone in Model Layer 4 (**Figure J4-5**), and the easternmost Kh zone in Model Layer 2 (**Figure J4-5**).

4.2.5 Groundwater Budget

Table J4-3 summarizes the March 2010 steady-state groundwater budget, which was created using output from the Site 86 GFM. Given that the model is a steady-state one, the inflow and outflow rates are equal, at approximately 8,250 gallons per minute (gpm). Groundwater recharge from precipitation represents the largest inflow component to the overall groundwater budget, whereas groundwater discharge to the land surface represents the largest outflow component. As a whole, the groundwater budget components and magnitudes appear reasonable for the area represented by Site 86 GFM.

4.3 Calibration Outcome

The process of calibrating the Site 86 GFM to March 2010 heads, head differences between layers, and groundwater flow directions has resulted in a model suitable for its intended application. The following are the primary attributes that make this model appropriate for its intended near-term uses:

- Model is capable of simulating March 2010 heads to within an acceptable degree of accuracy to achieve its near-term objectives, discussed in Section 1.1.1.
- Model is capable of simulating groundwater flow directions with depth that are reasonable and consistent with field observations, where available.
- Numerical solutions are constrained by 67 target head locations that are spatially distributed throughout the Site 86 area.

However, mathematical models can only approximate the processes of physical systems. Models are inherently inexact because the mathematical description of the physical system is imperfect and the understanding of interrelated physical processes is incomplete. CH2M HILL incorporated as many details of the physical system into the model as possible, given the limited available data. The Site 86 GFM is a useful tool that, when used carefully, can provide useful insight into processes of the physical system. Section 6.2 details the potential sources of input and output error.

TABLE J4-1
Comparison of Simulated and Target Heads
Development of the Site 86 Groundwater Flow and Transport Model

Location	Model Layer	Target Head[a] (ft msl)	Simulated Head (ft msl)	Residual Error[b] (ft)
IR86-MW01	1	11.71	12.16	0.45
IR86-MW02IW	2	11.15	11.77	0.62
IR86-MW03	1	11.71	12.11	0.40
IR86-MW04IW	2	11.28	11.73	0.45
IR86-MW07	1	13.84	12.08	-1.76
IR86-MW08IW	2	13.68	11.69	-1.99
IR86-MW09	1	11.15	11.60	0.45
IR86-MW10IW	2	10.99	11.17	0.18
IR86-MW11	1	14.01	11.67	-2.33
IR86-MW12IW	2	12.60	11.25	-1.35
IR86-MW13	1	12.27	11.71	-0.55
IR86-MW14IW	2	10.63	11.31	0.68
IR86-MW15DW	7	10.40	9.96	-0.43
IR86-MW15IW	3	10.46	10.06	-0.40
IR86-MW16DW	7	9.97	9.89	-0.08
IR86-MW16IW	3	10.07	10.02	-0.05
IR86-MW17DW	8	11.12	11.81	0.69
IR86-MW18DW	8	11.09	11.35	0.26
IR86-MW19DW	7	10.79	10.76	-0.04
IR86-MW20IW	3	11.02	11.11	0.09
IR86-MW22IW	4	10.40	9.59	-0.80
IR86-MW27IW	2	11.64	11.76	0.12
IR86-MW31DW	7	8.79	7.29	-1.50
IR86-MW31IW	3	8.53	8.11	-0.42
IR86-MW33IW	3	6.86	6.46	-0.39
IR86-MW34IW	3	5.67	5.05	-0.62
IR86-MW39	2	14.76	13.47	-1.29
IR86-MW40	2	14.10	14.11	0.00
IR86-MW41	2	13.64	13.45	-0.20
IR86-MW42DW	7	14.27	13.03	-1.23
IR86-MW42IW	3	14.40	13.17	-1.23

TABLE J4-1
Comparison of Simulated and Target Heads
Development of the Site 86 Groundwater Flow and Transport Model

Location	Model Layer	Target Head[a] (ft msl)	Simulated Head (ft msl)	Residual Error[b] (ft)
IR86-MW43IW	3	13.74	12.91	-0.83
IR86-MW44DW	7	13.32	12.65	-0.67
IR86-MW44IW	3	13.87	12.89	-0.98
IR86-MW45DW	7	13.68	12.63	-1.05
IR86-MW46IW	3	12.73	12.72	0.00
IR86-MW47	2	11.91	11.15	-0.75
IR86-MW47IW	3	11.68	10.96	-0.71
IR86-MW48	2	10.79	9.49	-1.30
IR86-MW48IW	3	11.18	9.55	-1.63
IR86-MW49DW	7	10.46	9.47	-1.00
IR86-MW51DW	7	9.61	9.23	-0.38
IR86-MW54IW	3	12.73	13.45	0.72
IR86-MW55IW	3	9.68	8.23	-1.45
IR86-MW56	2	9.28	8.36	-0.92
IR86-MW56DW	7	8.66	7.64	-1.02
IR86-MW58	2	7.45	7.50	0.05
IR86-MW58DW	7	7.61	7.15	-0.46
IR86-MW58IW	3	7.74	7.45	-0.29
IR86-MW59	2	6.82	7.07	0.25
IR86-MW59DW	7	6.56	6.79	0.23
IR86-MW59IW	4	6.99	7.01	0.03
IR86-MW60	2	6.26	5.88	-0.38
IR86-MW60IW	3	6.04	5.83	-0.20
IR86-MW62	2	5.38	5.22	-0.16
IR86-MW63	2	5.18	5.25	0.07
IR86-MW63IW	3	5.08	5.20	0.11
IR86-MW64	3	3.90	3.62	-0.28
IR86-PTW1	3	10.69	11.08	0.38
USTCSFF-DW06	3	14.10	15.10	0.99
USTCSFF-MW24	1	13.94	15.25	1.31
SWMU318-MW05	2	13.02	13.11	0.09

TABLE J4-1
Comparison of Simulated and Target Heads
Development of the Site 86 Groundwater Flow and Transport Model

Location	Model Layer	Target Head[a] (ft msl)	Simulated Head (ft msl)	Residual Error[b] (ft)
SWMU318-MW06	2	12.10	11.15	-0.95
SWMU318-MW08	2	13.38	13.16	-0.22
SWMU318-MW01	2	12.73	12.56	-0.17
SWMU318-MW03	2	13.55	13.02	-0.52
SWMU318-MW07	2	14.08	11.97	-2.11

[a]Calibration target head values from March 2010.
[b]Residual error computed as simulated head value minus the calibration-target head value.

TABLE J4-2
Comparison of Simulated and Target Head Differences
Development of the Site 86 Groundwater Flow and Transport Model

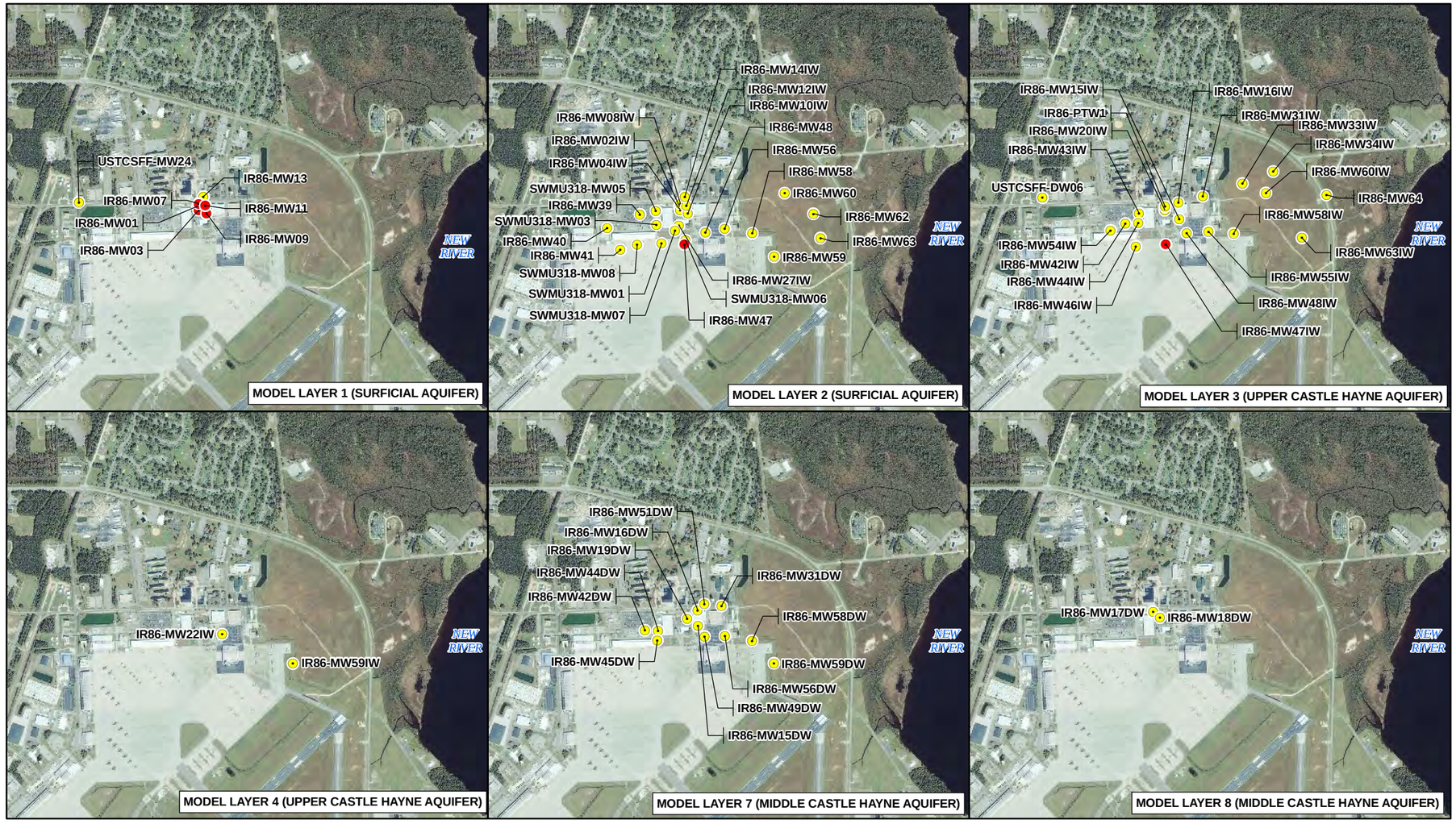
Upper/Lower Well	Upper/Lower Layer	Target Vertical Head-Difference[a] (feet)	Simulated Head Difference (feet)	Residual Error[b] (feet)
IR86-MW01/ IR86-MW02IW	1/2	0.56	0.39	-0.17
IR86-MW03/ IR86-MW04IW	1/2	0.43	0.38	-0.05
IR86-MW07/ IR86-MW08IW	1/2	0.16	0.39	0.23
IR86-MW47/ IR86-MW47IW	2/3	0.23	0.19	-0.04
IR86-MW11/ IR86-MW12IW	1/2	1.41	0.42	-0.99
IR86-MW09/ IR86-MW10IW	1/2	0.16	0.43	0.27

[a]Calibration target head differences from March 2010.
[b]Residual error computed as simulated head difference minus the calibration target head difference.

TABLE J4-3
Modeled 2010 Steady-State Groundwater Budget
Development of the Site 86 Groundwater Flow and Transport Model

Inflow Component	Inflow Rate (gpm)	Outflow Component	Outflow Rate (gpm)
Groundwater Recharge from Precipitation	6,385	Groundwater Discharge to the Land Surface	3,570
Groundwater Recharge from Streams	1,865	Groundwater Discharge to Streams	2,670
		ET of Shallow Groundwater	2,010
Total Groundwater Inflows	*8,250*	*Total Groundwater Outflows*	*8,250*

gpm = gallons per minute
ET = evapotranspiration



NOTES:

ONLY MODEL LAYERS WITH TARGET LOCATIONS ARE DEPICTED.

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

LEGEND

- CALIBRATION TARGET HEAD LOCATION
- TARGET HEAD LOCATION AND VERTICAL HEAD-DIFFERENCE TARGET

N

0 1,000 2,000 4,000 Feet

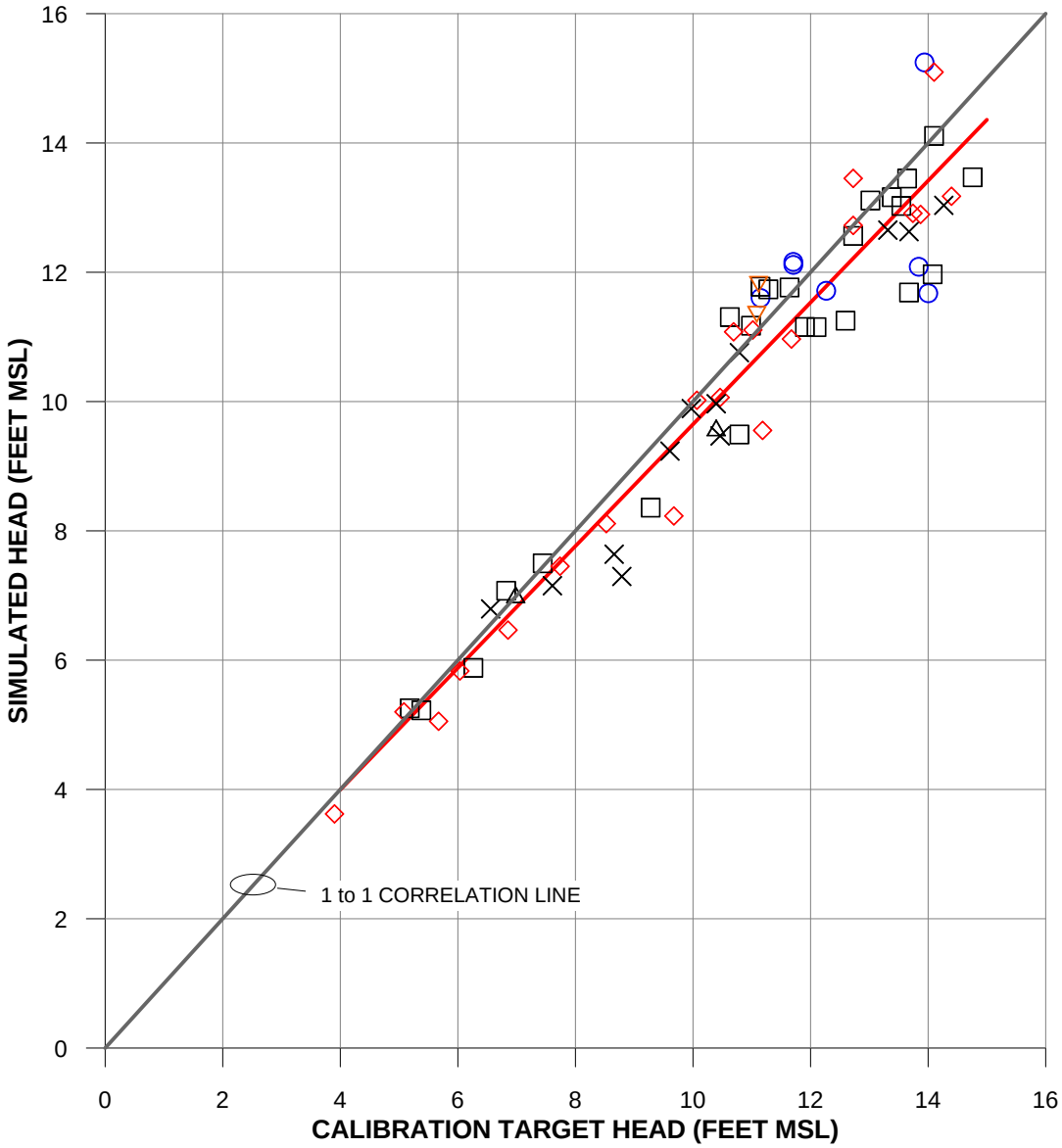
1 inch = 2,000 feet

Figure J4-1
Calibration Target Locations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

Fig04-02_SimObs.grf



LEGEND

- MODEL LAYER 1 (SURFICIAL AQUIFER)
- MODEL LAYER 2 (SURFICIAL AQUIFER)
- MODEL LAYER 3 (UPPER CASTLE HAYNE)
- MODEL LAYER 4 (UPPER CASTLE HAYNE)
- MODEL LAYER 7 (MIDDLE CASTLE HAYNE)
- MODEL LAYER 8 (MIDDLE CASTLE HAYNE)
- LINEAR BEST FIT LINE

SUMMARY STATISTICS

ME = -0.40 FEET
RMSE = 0.86 FEET
RANGE IN CALIBRATION
TARGET HEADS = 10.86 FEET
RMSE/RANGE = 7.9 PERCENT
R^2 = 0.93
n = 67

Figure J4-2
Simulated Versus Calibration Target Heads
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

LEGEND

RESIDUAL ERROR (FEET)

- 2 to 2.5
- 1 to 2
- 0.5 to 1
- -0.5 to 0.5
- -1 to -0.5
- -2 to -1
- -2.5 to -2

NOTES:

ONLY MODEL LAYERS WITH CALIBRATION TARGET LOCATIONS ARE DEPICTED.

RESIDUAL ERROR COMPUTED BY SUBTRACTING THE CALIBRATION TARGET HEAD VALUE FROM THE SIMULATED HEAD VALUE.

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

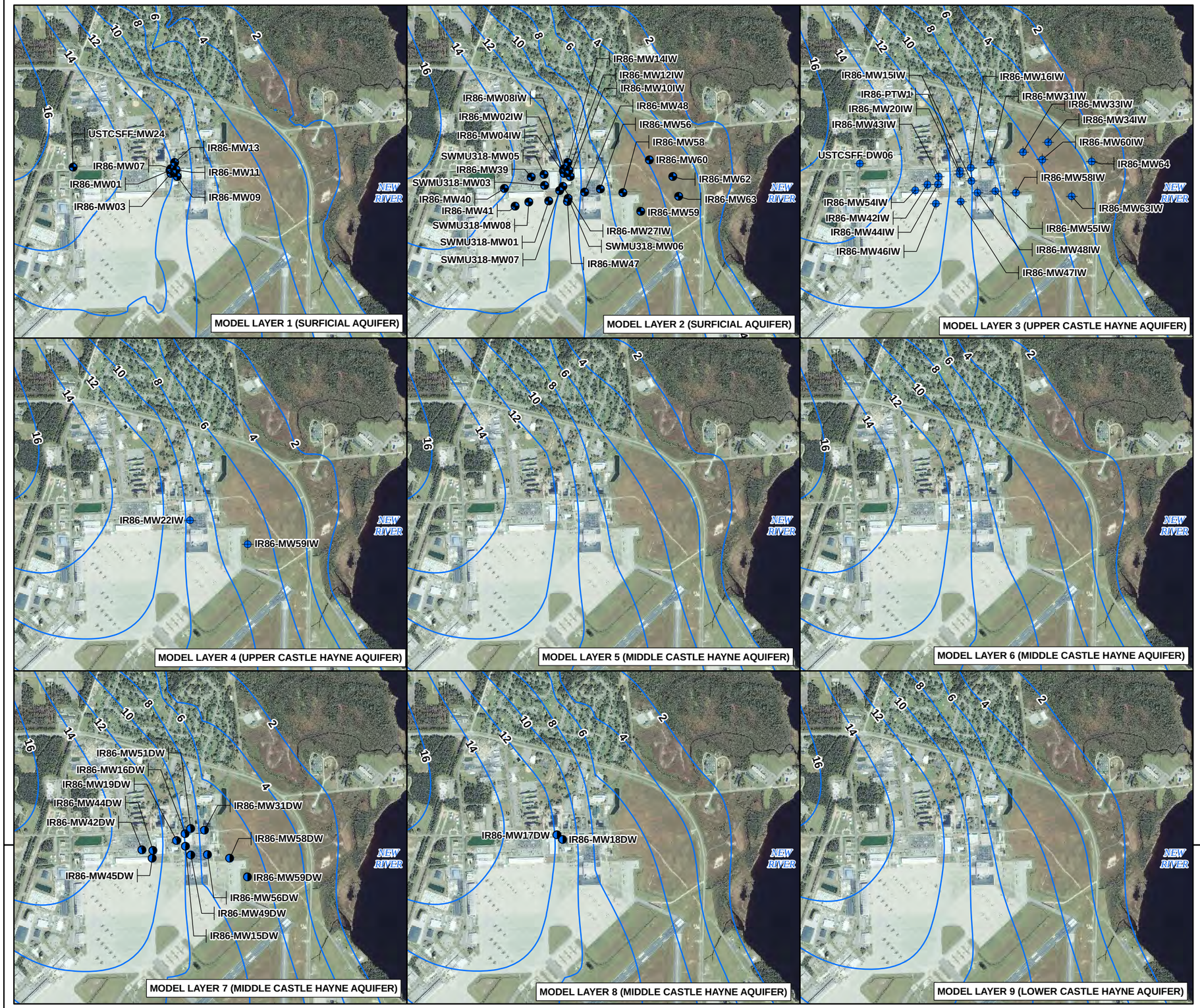
0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J4-3
Spatial Distribution of Residual Error in Simulated Heads
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER
- SIMULATED HEAD CONTOUR (FEET MSL)

NOTE: DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

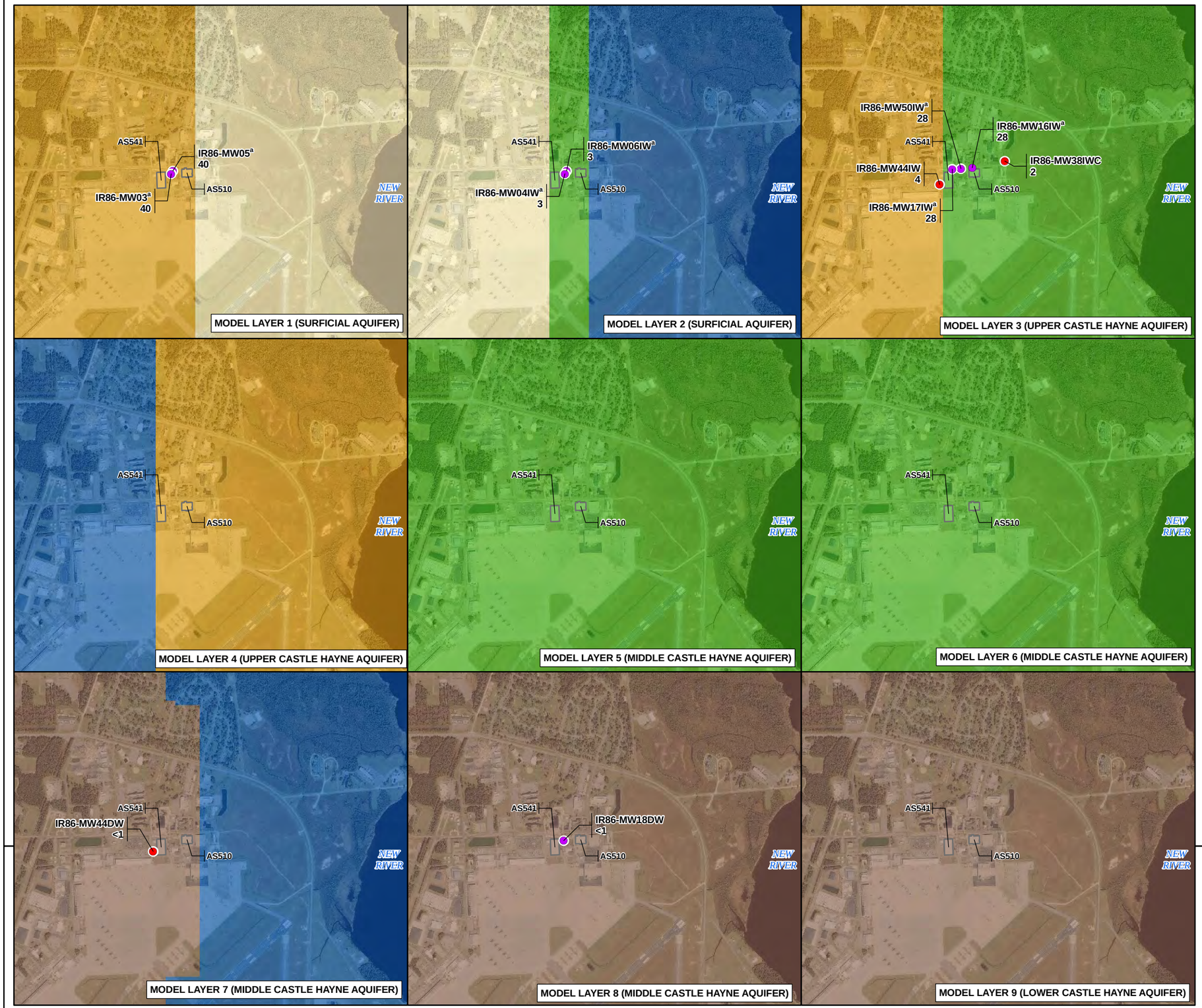
0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J4-4
Spatial Distribution of Simulated Heads
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

- Kh BASED ON AQUIFER TEST (FEET/DAY)
- Kh BASED ON SLUG TEST (FEET/DAY)

HORIZONTAL HYDRAULIC CONDUCTIVITY, Kh (FEET/DAY)

- <1 to 1
- 1 to 10
- 10 to 20
- 20 to 40
- 40 to 60
- 60 to 100

[a]Kh ESTIMATE IS BASED ON THE COMBINED RESPONSE OF WELLS IN EACH LAYER.

NOTE:

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

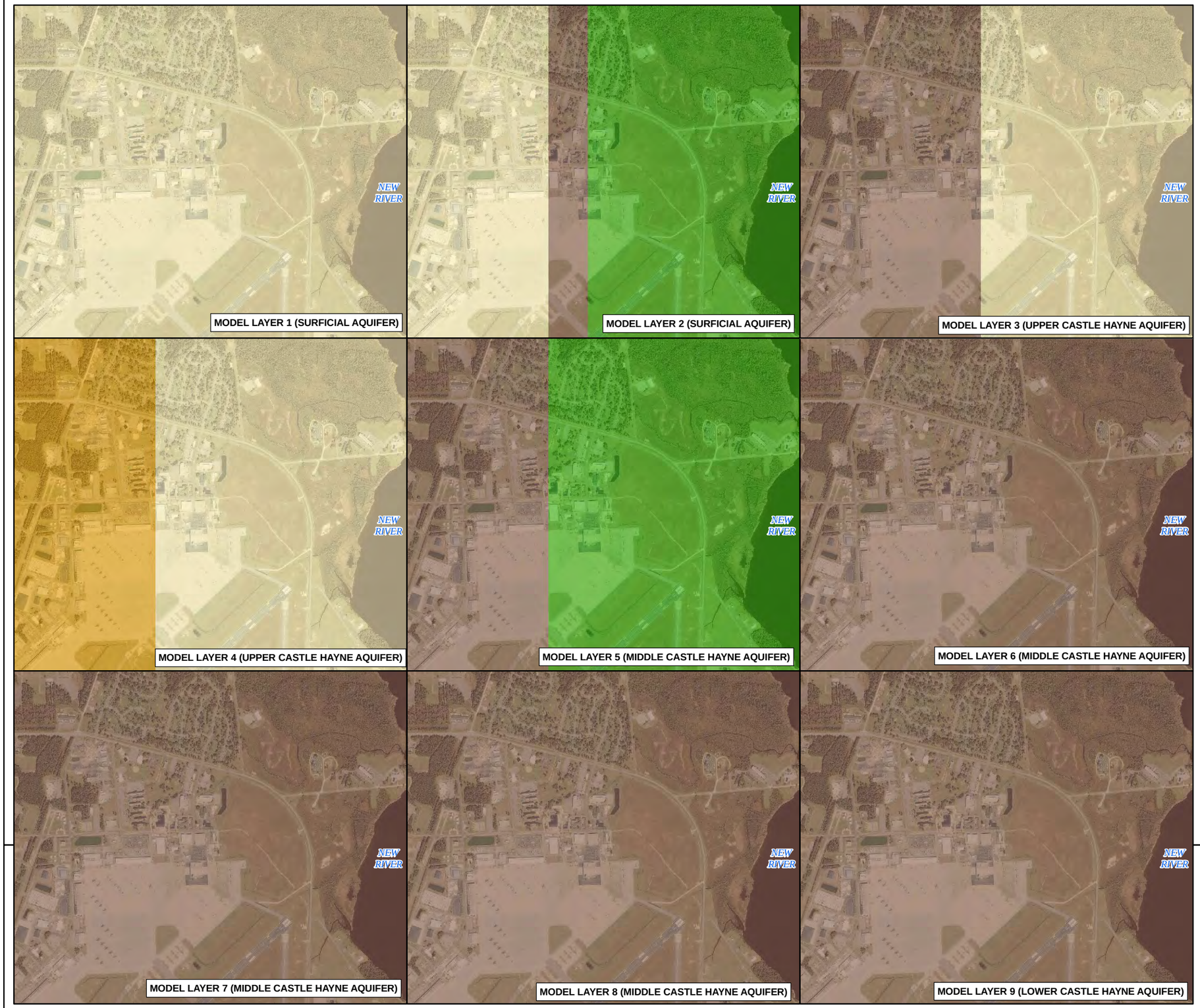
0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J4-5
Distribution of Modeled Horizontal Hydraulic Conductivity
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

VERTICAL HYDRAULIC CONDUCTIVITY, Kv (FEET/DAY)

- 0 to 0.5
- 0.5 to 1
- 1 to 5
- 5 to 10

NOTE:

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

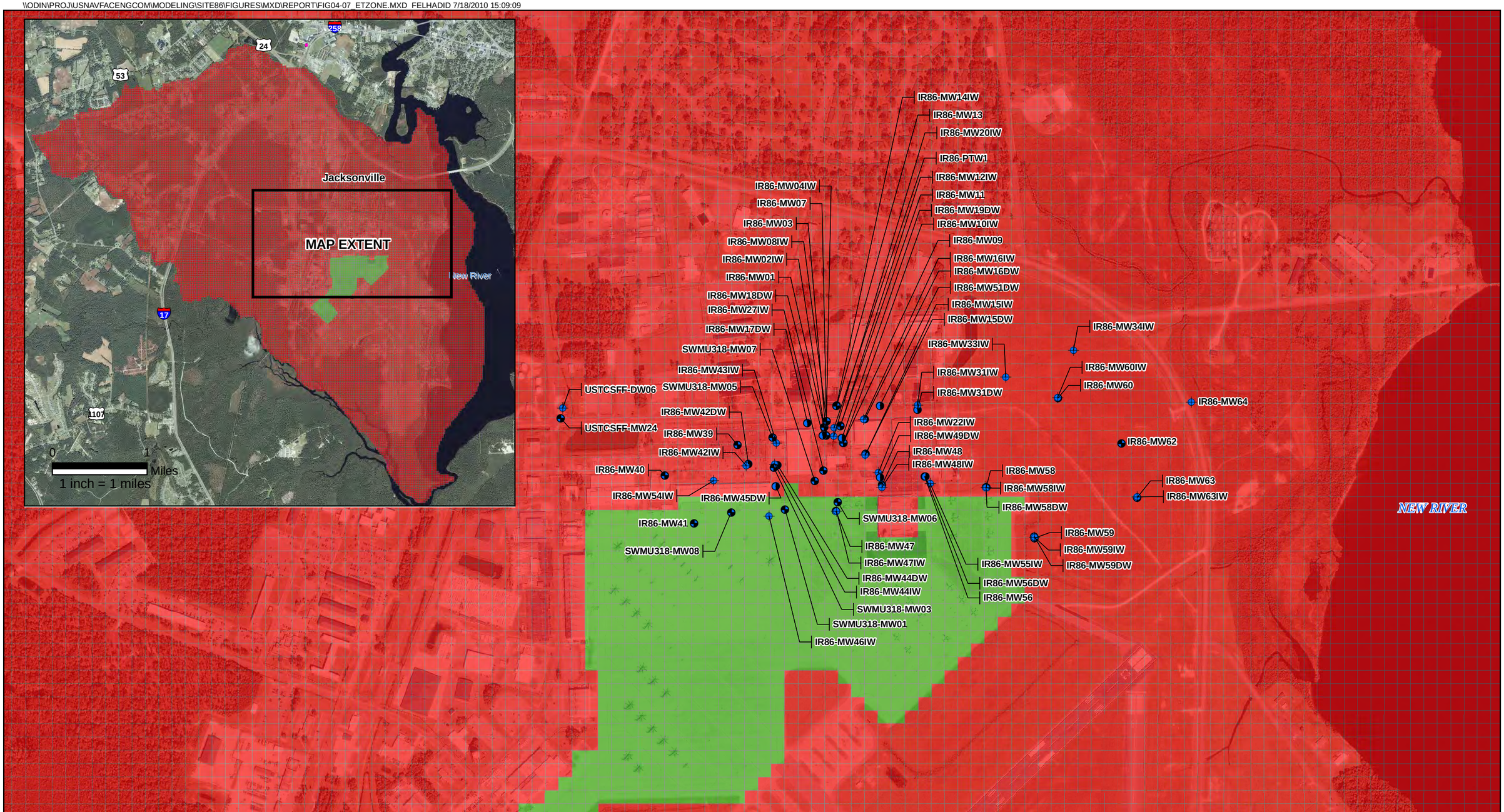
0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J4-6
Distribution of Modeled Vertical
Hydraulic Conductivity
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER

MODELED GROUNDWATER RECHARGE FROM PRECIPITATION AND EVAPOTRANSPIRATION RATE

- RECHARGE = 22 in/yr; MAXIMUM ET OF SHALLOW GROUNDWATER = 16 in/yr
- RECHARGE = 0 in/yr; MAXIMUM ET OF SHALLOW GROUNDWATER = 0 in/yr

NOTE: DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

0 350 700 1,400 Feet

1 inch = 700 feet

Figure J4-7
Modeled Recharge from Precipitation and Evapotranspiration of Shallow Groundwater
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

SECTION 5

Model Application

The Site 86 GFM was calibrated to simulate 3D, steady-state subsurface flow based on the March 2010 groundwater elevation data. The steady-state head field provides a numerical framework for the simulation of solute transport. Although it is impossible to predict future hydrology and solute conditions with certainty, the calibrated version of the Site 86 GFM was used to forecast potential TCE and VC plume conditions by using the current 3D distributions of TCE and VC concentrations as initial solute conditions. The TCE and VC concentration data from the 2009–2010 sampling events were distributed in the model in the appropriate layers, and the model was run forward in time for a period of 100 years. Despite the uncertainties associated with the TCE source areas, the approach of starting with recent TCE and VC conditions and looking forward in time is sufficient for achieving the near-term objectives described in Section 1.1.1.

5.1 Solute Transport Methodology

5.1.1 Solute Transport Formulation

The solute transport model uses a dual-domain (i.e., dual-porosity) transport formulation, as opposed to a more traditional single-domain transport formulation. With single-domain transport models, the porous medium is conceptualized as one transport domain with a single defined effective (i.e., mobile) porosity (θ_m). The θ_m represents the interconnected pore space in the subsurface where the dominant transport process is advection, as opposed to diffusion. For the purposes of this appendix, dead-end pore space and low-permeability zones, where only very slow advection and diffusion are the dominant transport processes, are contained within the immobile porosity (θ_{im}). With single-domain transport models, it is assumed that all of the void space represented by θ_m is available for fluid flow and transport; however, the θ_{im} of the porous medium is ignored. Ignoring effects of the θ_{im} can be problematic for multidecade-old solute plumes, because the processes of very slow advection and diffusion have ample time to transmit a portion of the available solute mass into the less-mobile portions of the subsurface.

The dual-domain transport formulation conceptualizes the porous medium with both θ_m and θ_{im}, the sum of which equals the total porosity ($\theta_m+\theta_{im}=\theta_t$). When conceptualized in this manner, θ_m is equivalent to the effective porosity. The dual-domain transport formulation was implemented to more accurately account for the entire θ_t with the goal of improving the predictive capabilities over what could have been achieved with a single-domain transport formulation, with respect to solute persistence and mobility.

5.1.2 Soil-Specific Transport Properties

Soil-specific transport parameters at Site 86 include θ_t, bulk density (ρ_b), and fraction of organic carbon (f_{oc}). The θ_t term was assumed to equal 0.35 for this modeling effort, which is reasonable for the materials encountered during drilling at Site 86. A ρ_b value of 1.72 g/cm^3

was computed from the θ_t value and an assumed grain density (ρ_s) value of 2.65 g/cm^3, according to Equation 5-1 (Freeze and Cherry, 1979):

$$\rho_b = \rho_s (1 - \theta_t) \qquad (5\text{-}1)$$

The θ_m term was initially assumed to equal 0.15; by difference, the initial θ_{im} term was computed as the difference between θ_t and θ_m, or 0.20.

Measurements of f_{oc} in soil samples collected during the drilling of monitoring well IR86-PTW-1 varied between 0.06 and 0.08 percent. The value used to compute a solute distribution coefficient (K_d) in the model was the average value of 0.07 percent, as is discussed in the following subsection. **Table J5-1** lists the soil-specific transport parameter values used in the predictive simulations.

5.1.3 Solute-Specific Transport Properties

Solute-specific transport parameters at Site 86 include the dispersivity, soil organic carbon–water partitioning coefficient (K_{oc}), dual-domain mass transfer (DDMT) coefficient, and first-order decay due to biodegradation. Longitudinal, transverse, and vertical dispersivity values of 29 ft, 2.9 ft, and 0.29 ft, respectively, were assumed for modeling TCE, based on Xu and Eckstein (1995). Dispersivity values of 13 ft, 1.3 ft, and 0.13 ft were used for modeling VC. K_d is the product of f_{oc} and K_{oc} and is used by the model to compute sorption of the solutes to the porous medium. The K_{oc} values for TCE and VC were obtained from the Hazardous Substances Data Bank.[5] A value of K_{oc} for TCE of 101 mL/g yields a K_d value of 0.07 mL/g. A value of K_{oc} for VC of 57 mL/g yields a K_d value of 0.04 mL/g.

The initial DDMT coefficient used for Site 86 transport modeling was estimated using dimensional analysis via a Type I Damköhler Number (*DaI*), according to Equation 5-2, as follows:

$$\mathrm{DaI} = \frac{\alpha \mathrm{L}}{\mathrm{V_s}} \qquad (5\text{-}2)$$

When an advecting solute undergoes first-order mass transfer between the mobile and immobile domains, the *DaI* is approximately equal to the product of the DDMT coefficient (α) and solute plume length (L) divided by the solute velocity (V_s). The *DaI* can be generalized as the ratio of the mass transfer timescale to the advection timescale. As the magnitudes of these timescales approach consistent values (as *DaI* approaches unity), if sufficient solute mass resides in the immobile domain to cause back diffusion into the mobile domain, then one would expect to observe greater tailing in time-series solute concentration plots (i.e., chemographs) (Haggerty, 2004).

It is assumed that DDMT is an important process at Site 86 (the plumes have presumably been in place for decades). As such, the initial value of α was estimated by setting a *DaI* at unity, estimating a TCE velocity of 0.02 ft/day and a TCE plume length of 1,500 feet, and solving for α to get a value of 1×10^{-5} per day (day^{-1}). This *DaI* calculation provides a rough estimate for a DDMT coefficient. This value for α was used for both TCE and VC. In reality,

[5] http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB

TCE and VC would most likely exhibit different DDMT rates, owing to different solute velocities, plume lengths, and emplacement durations. However, given the uncertainty in this parameter and the near-term objectives, the same value was used for both solutes at this stage of the investigation.

The solute transport model also simulates decay of TCE through biodegradation. An initial value for the solute decay half-life was estimated using the method of Zhang and Heathcote (2003) (modified from Buscheck and Alcantar, 1995) to be 189 years. This value was used for decay in both the dissolved and sorbed phases of TCE, whereas no decay term was input for VC. **Table J5-1** lists the solute-specific transport parameter values used in the predictive simulations.

5.1.4 Initial Solute Conditions

The 3D, 2009-2010 distributions of TCE and VC concentrations served as initial solute conditions in the transport model. Solute mass was distributed in the portion of the domain representing the mobile porosity in the appropriate layers (see **Figures J5-1** and J**5-2**). Because no data exist for solute concentrations in the immobile porosity, the TCE and VC distributions assigned to the mobile porosity were also assigned to the immobile porosity. Thus, at time zero of the forward simulation, the solute concentrations were assumed to be in equilibrium between not only the dissolved and sorbed phases of the mobile domain but also between these phases of the immobile domain. The transport model was then run forward in time for a period of 100 years to forecast potential TCE and VC plume migration pathways and solute persistence. In addition, the transport model was used to forecast the potential timing and magnitude associated with the eventual discharge of TCE and VC to the New River. These simulations did not include source terms for TCE or VC.

5.2 Results

Figure J5-3 shows the modeled extents of the TCE (3 µg/L) and VC (0.03 µg/L) plumes, which are depth-integrated footprints of the modeled plumes. Modeled plume footprints are depicted at 10, 20, and 40 years of transport after the starting conditions. The footprints shown in **Figure J5-3** are the North Carolina maximum contaminant levels (MCLs) for TCE and VC: 3 and 0.03 µg/L, respectively.

According to the model, the plumes migrate in east-northeastward toward the New River in the general direction of groundwater flow. However, between 10 and 15 years from the start of the simulation, the modeled TCE plume begins to retract. By simulation year 16, the modeled TCE plume splits into three smaller plumes that center near wells IR86-MW48IW, IR86-MW58, and IR86-MW42IW. The model suggests that the TCE plume near IR86-MW48IW drops below 3 µg/L after 21 years, and the plume around IR86-MW42IW drops below the MCL after 32 years. The model indicates that the plume around IR86-MW58 remains above 3 µg/L through simulation year 100.

The modeled VC plume reaches the New River after approximately 10 years of the simulation. The VC plume continues to expand in an east-northeastward direction through 40 years of simulated transport after the starting conditions (**Figure J5-3**). According to the models, without including continuing sources of TCE and VC, these plumes persist at concentrations above their respective MCLs for at least 100 years. This occurs because the

simulated mass in the immobile domain slowly diffuses into the mobile domain over the simulation period, sustaining the plumes.

The persistence and mobility of the TCE and VC plumes depend on a variety of chemical and physical processes. For instance, the persistence of plumes can be heavily dependent on source conditions, starting solute conditions in both the mobile and immobile domains, and the DDMT input parameters that describe the dual-domain behavior. Given the limited available data on source area durations, locations, and timing and DDMT parameters, these modeling results are subject to significant uncertainty. Thus, modeled forecasts of plume persistence and mobility should be scrutinized along with other observations of site conditions.

Figures J5-4 and J**5-5** show the simulated chemographs of TCE and VC, respectively. Virtual monitoring wells were programmed into the transport model at selected locations between the Site and the New River to monitor simulated solute concentrations. Solute concentrations were output at annual time steps throughout the course of the simulation. Locations of virtual monitoring wells were selected in an attempt to illustrate modeled solute migration along approximate plume centerlines and in lateral areas. Simulated chemographs for Model Layers 4, 5, and 6 are not provided, because they are within the range of those shown in **Figure J5-4**. Showing results from all model layers would have made the figure unnecessarily cluttered. Model Layer 8 represents the deepest model layer where concentrations of TCE are forecasted to exceed the North Carolina Groundwater Quality Standard (NCGWQS) of 3 μg/L, so Model Layer 9 is not shown in **Figure J5-4**. Model Layer 8 is the deepest layer shown in the VC chemographs presented in **Figure 5-5**. VC is not estimated to exceed the NCGWQS of 0.03 μg/L in Model Layer 9.

Figure J5-4 shows the maximum TCE concentration at the three easternmost wells bordering the New River at approximately 3 μg/L, according to the model. This maximum is forecast to occur between 15 and 20 years of transport from the beginning of the simulation and slowly decline thereafter. **Figure J5-5** shows the maximum VC concentration at these same three wells at approximately 0.3 μg/L, according to the model. Likewise, this maximum is also forecast to occur between 15 and 20 years of transport from the beginning of the simulation and slowly decline thereafter, consistent with the modeled TCE concentrations.

The transport model indicates that detectable concentrations of TCE and VC would eventually migrate into deeper aquifer layers and the New River. Although existing deep wells at the Site have not shown any evidence of contamination, there are no deep wells between the Site and the New River to verify that these deeper layers remain uncontaminated along flow paths toward the river. Based on the limited number of closely spaced monitoring wells that allow estimation of a local vertical head difference, downward hydraulic gradients do exist at the Site. Therefore, a mechanism exists to move mass into the deeper aquifers. Monitoring wells screened in the deeper aquifer between the Site and the New River would be useful to constrain the transport model and more fully characterize the Site. A limited number of such deeper wells could be colocated adjacent to shallow wells to facilitate estimation of both lateral and vertical hydraulic gradients and aquifer properties.

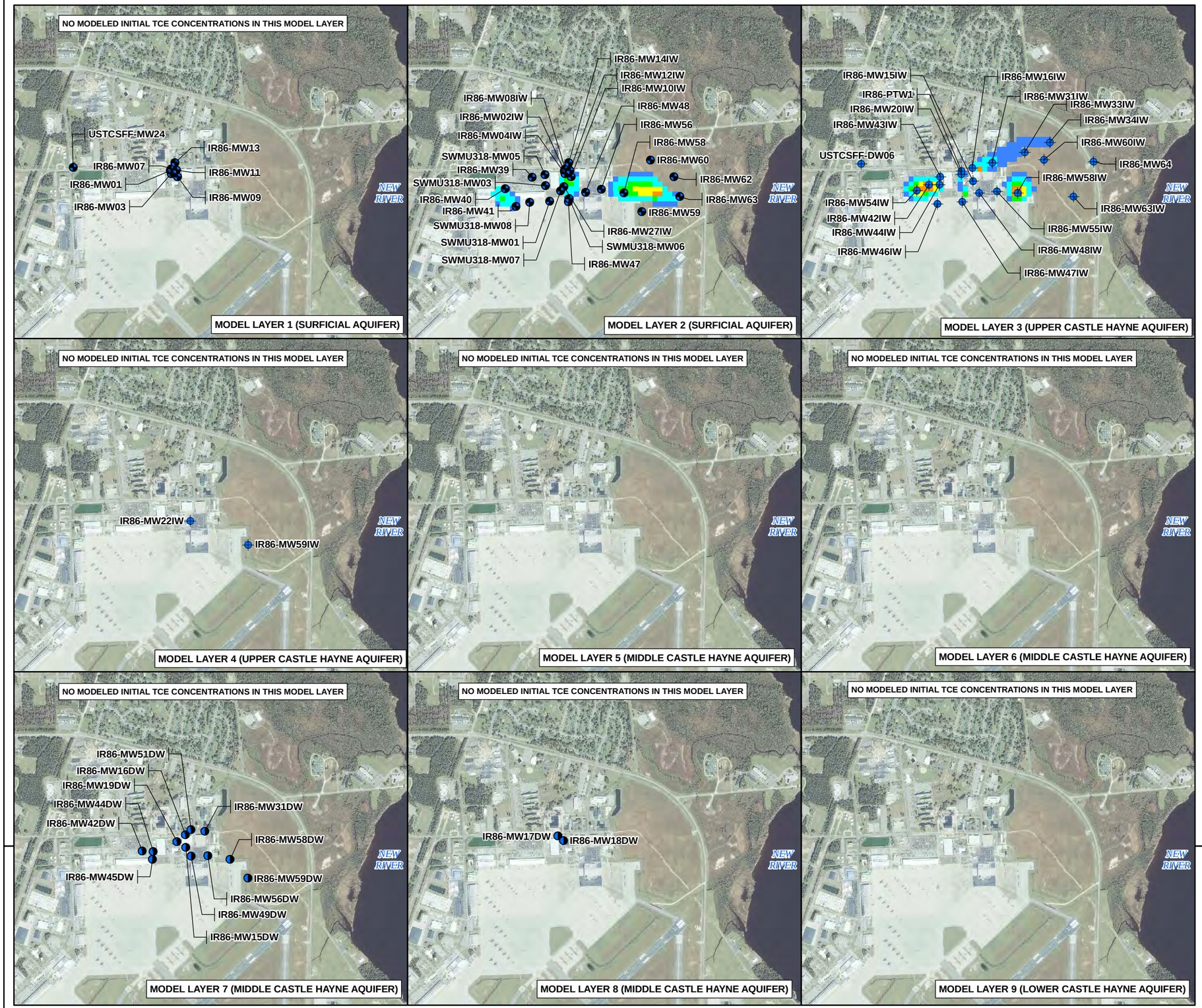
In summary, the transport model suggests that the plumes migrate toward the New River. The simulated chemographs presented in **Figures J5-4** and J**5-5** indicate TCE and VC in groundwater near the river at concentrations at or near their respective NCGWQSs.

Although there is considerable uncertainty in these modeling results, the trend suggests that solute concentrations could reach the New River at detectable concentrations as a result of the existing plumes beneath Site 86, even without continuing sources.

TABLE J5-1
Summary of Transport Parameter Values Used in Predictive Simulations
Development of the Site 86 Groundwater Flow and Transport Model

Parameter	TCE	Vinyl Chloride
ρ_b (g/cm^3)	1.72	1.72
θ_m	0.15	0.15
θ_{im}	0.20	0.20
θ_t	0.35	0.35
Dispersivity (feet) (longitudinal/transverse/vertical)	29/2.9/0.29	13/1.3/0.13
f_{oc} (percent)	0.07	0.07
K_{oc} (mL/g)	101	57
K_d (mL/g)	0.07	0.04
α (day^{-1})	1×10^{-5}	1×10^{-5}
Decay Half-Life (years)	189	No Decay

ρ_b = bulk density
θ_m = mobile porosity
θ_{im} = immobile porosity
θ_t = total porosity
f_{oc} = fraction of organic carbon
K_{oc} = soil organic carbon-water partitioning coefficient
K_d = solute distribution coefficient
α = dual-domain mass transfer coefficient
g/cm^3 = grams per cubic centimeter
mL/g = milliliters per gram



LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER

INITIAL TCE CONCENTRATION (µg/L)

- 3 to 5
- 5 to 25
- 25 to 50
- 50 to 100
- 100 to 500
- >500

NOTES:

CONCENTRATIONS SHOWN WERE ASSIGNED TO BOTH THE MOBILE AND IMMOBILE DOMAINS OF THE TRANSPORT MODEL.

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J5-1
Initial Modeled TCE Concentrations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER

INITIAL VINYL CHLORIDE CONCENTRATION (µg/L)

- 0.03 to 1
- 1 to 5
- 5 to 10
- 10 to 25
- 25 to 50
- 50 to 100
- >100

NOTES:

CONCENTRATIONS SHOWN WERE ASSIGNED TO BOTH THE MOBILE AND IMMOBILE DOMAINS OF THE TRANSPORT MODEL.

DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

N

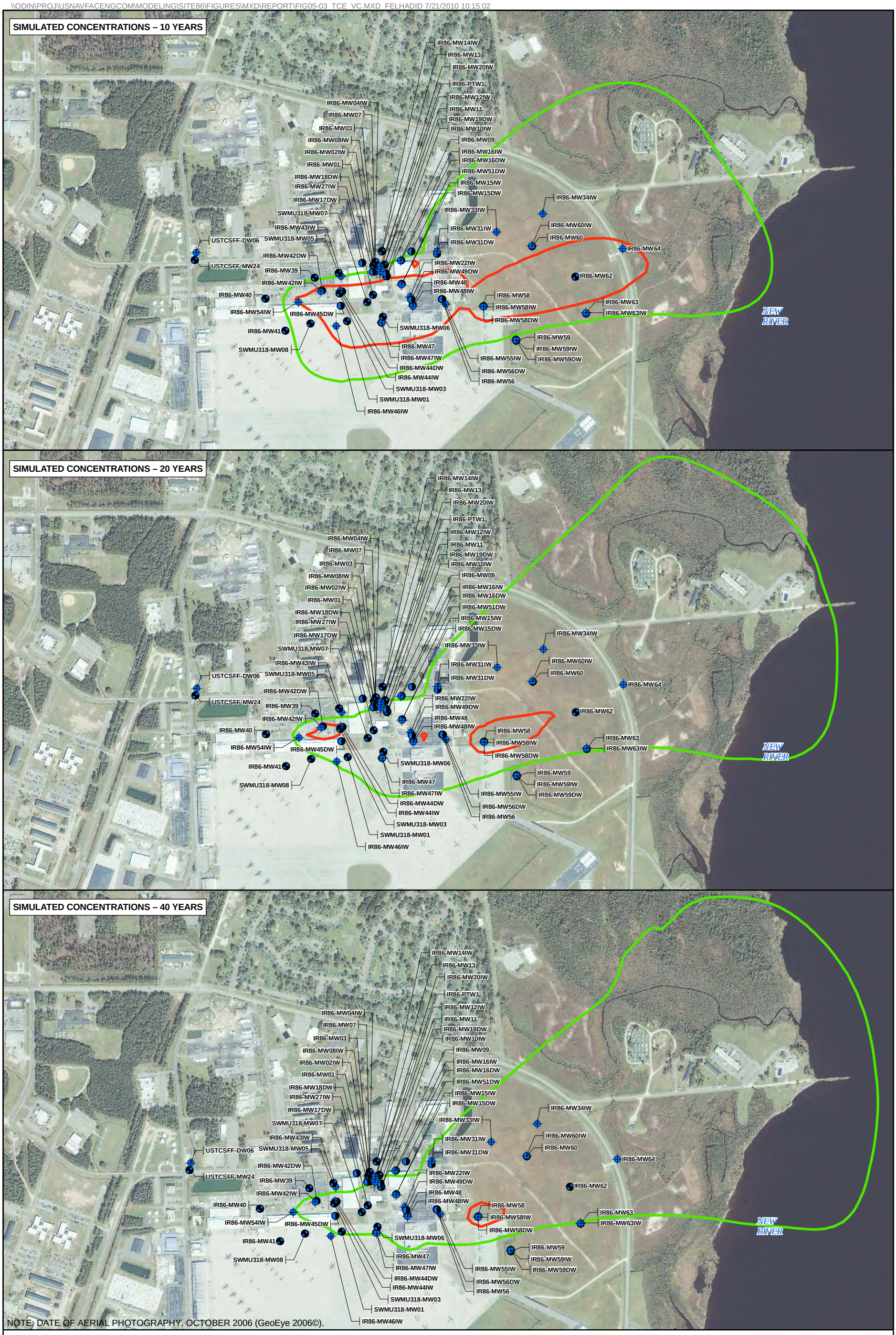
0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Figure J5-2
Initial Modeled Vinyl Chloride Concentrations
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

- SURFICIAL AQUIFER
- UPPER CASTLE HAYNE AQUIFER
- MIDDLE CASTLE HAYNE AQUIFER
- SIMULATED TCE CONCENTRATION (3 µg/L)
- SIMULATED VINYL CHLORIDE CONCENTRATION (0.03 µg/L)

N

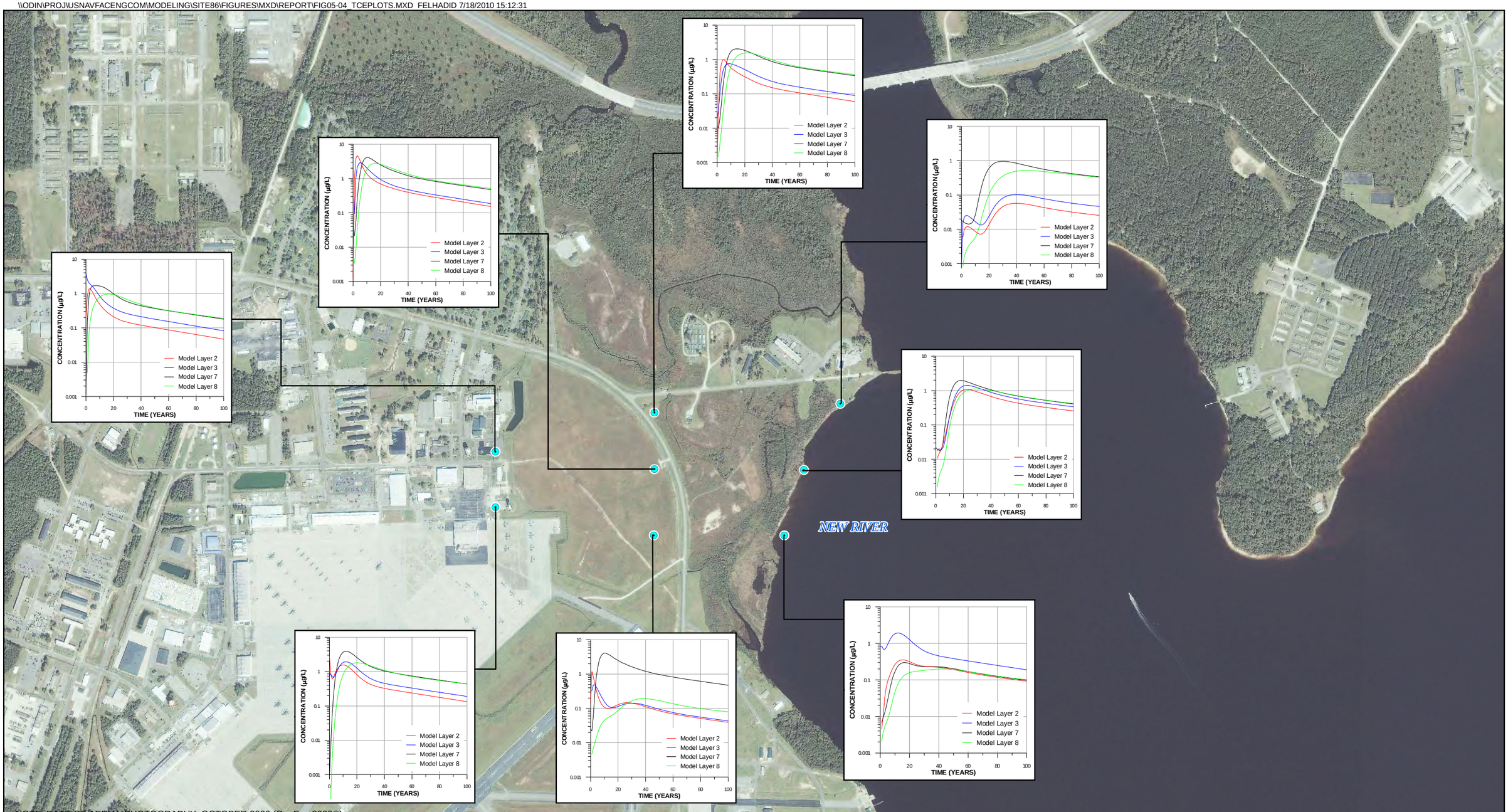
0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Figure J5-3
Simulated TCE and Vinyl Chloride Plume Footprints
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



NOTE: DATE OF AERIAL PHOTOGRAPHY, OCTOBER 2006 (GeoEye 2006©).

LEGEND

- VIRTUAL MONITORING WELL
- MODEL LAYER 2 (SURFICIAL AQUIFER)
- MODEL LAYER 3 (UPPER CASTLE HAYNE)
- MODEL LAYER 7 (MIDDLE CASTLE HAYNE)
- MODEL LAYER 8 (MIDDLE CASTLE HAYNE)

N

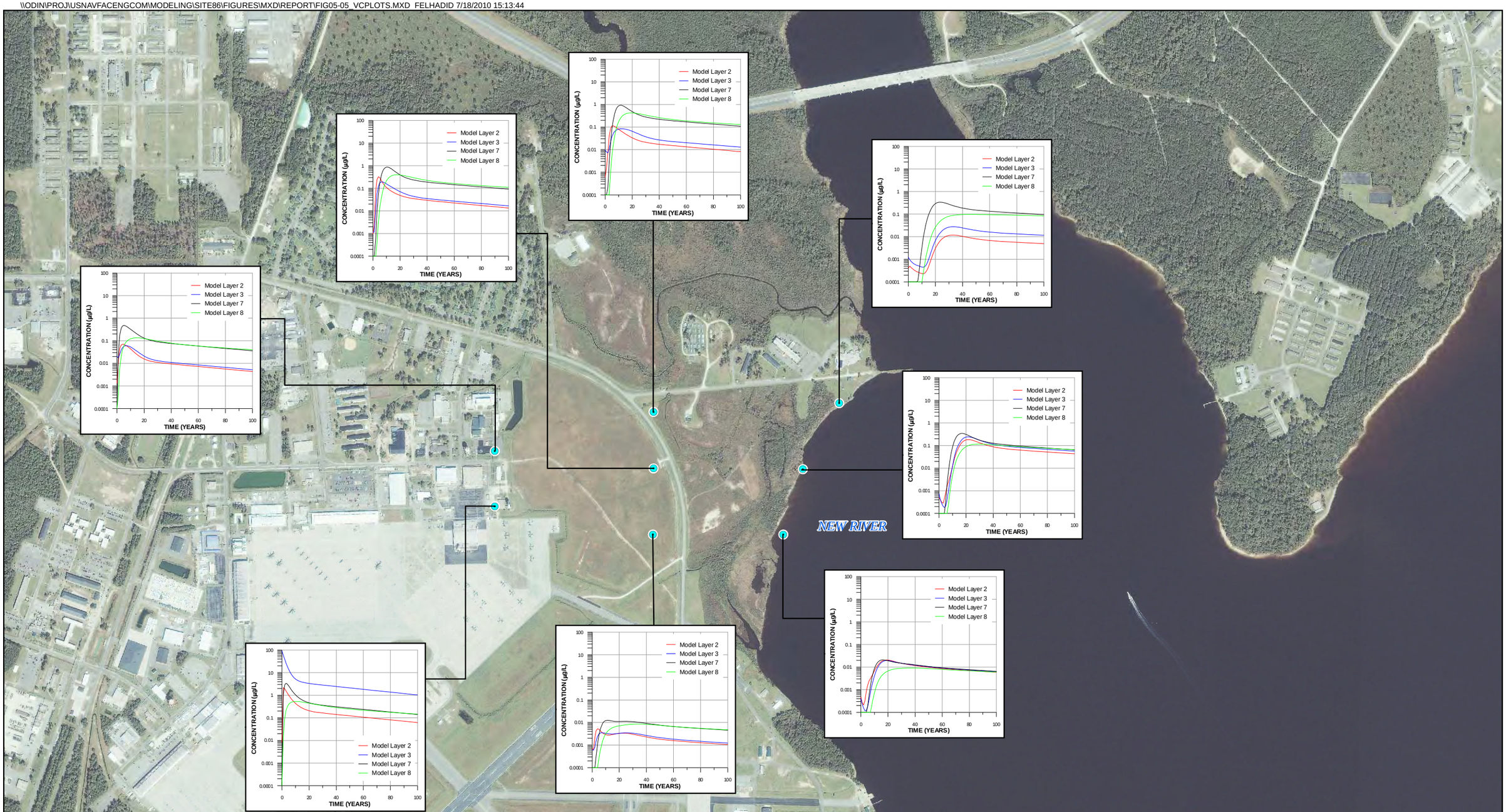
0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Figure J5-4
Simulated TCE Chemographs
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD



LEGEND

- VIRTUAL MONITORING WELL
- MODEL LAYER 2 (SURFICIAL AQUIFER)
- MODEL LAYER 3 (UPPER CASTLE HAYNE)
- MODEL LAYER 7 (MIDDLE CASTLE HAYNE)
- MODEL LAYER 8 (MIDDLE CASTLE HAYNE)

N

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Figure J5-5
Simulated VC Chemographs
Expanded Supplemental Remedial Investigation
Operable Unit 20 (Site 86)
MCB CamLej
North Carolina

CH2MHILL

Generated By: D. Meadows/RDD Checked by: N. Brown/RDD

SECTION 6

Model Limitations

6.1 Limitations

Predictive versions of the Site 86 GFM were used to simulate processes of the physical subsurface system at and surrounding Site 86. These models are imperfect in that they do not accurately describe all aspects of interrelated physical and chemical processes beneath the Site. However, CH2M HILL incorporated as many details of the physical system into the Site 86 GFM as possible, given the limited available data. The minimal available data limits the degree to which the model assumptions and results can be constrained. Thus, the modeling solutions discussed herein should be considered nonunique, meaning that different combinations of model parameter values could produce equally good fits to the calibration targets, but result in predictive results that are quite different. The modeling forecasts presented herein represent one potential outcome among several others that could be plausible.

As discussed in Section 4.3, the process of calibrating the model to March 2010 conditions resulted in a model that is suitable for its intended application to achieve the near-term objectives described in Section 1.1.1. However, groundwater flow directions in the future could also vary in response to future changes in hydrology, land use, and water use. Thus, groundwater flow and solute migration pathways in the future will not necessarily follow those indicated with the transport models that are linked with the steady-state GFM. However, the predictions described in this report are considered plausible and reasonable, given the available data and near-term objectives. Continued monitoring data are needed to better understand both hydraulic and transport mechanisms that will affect solute persistence and mobility in the future.

Another significant source of uncertainty is related to the solute sources. Very little is known about the locations and types of solute sources or the timing and duration of chemical releases. Sources were not modeled in the predictive simulations presented herein. However, it is likely that inclusion of source terms in the model would result in greater forecasted concentrations along the steady-state migration pathways.

Additional information related to the aquifer's physical and chemical parameters and their spatial distributions would help constrain the model. As more hydraulic data become available through time, hydraulic properties should be periodically evaluated and compared with the assumptions in the Site 86 GFM. This is especially true for areas that are currently located between contaminated zones and the New River, where there is currently minimal available information regarding subsurface flow. Obtaining this information would provide the opportunity to improve the CSM and predictive capabilities of GFM.

6.2 Potential Sources of Error

Input and output model data have associated errors or error potential, resulting in an overall uncertainty in results. The sources of uncertainty include transient effects, human

errors, scaling effects, interpolation errors, and numerical errors (Anderson and Woessner, 1992).

6.2.1 Transient Effects

Groundwater-level measurements in wells could reflect the presence of transient effects in the groundwater system that might not be represented in the Site 86 GFM. The only available subsurface access for directly monitoring groundwater conditions is through groundwater wells. If transient effects of the groundwater system are manifested in groundwater levels at timescales other than those represented in the numerical model, some portion of the residual error between the field-measured groundwater level and the simulated output could be due to these transient effects.

6.2.2 Human Errors

It is not possible to guarantee that all of the modeling results presented in this report are free of human error. However, CH2M HILL strived to avoid introducing human errors by adhering to quality assurance protocols. The following are examples of potential sources of human errors:

- Measurement Errors. Calibration target values include measurement errors. Measurement errors relate to the accuracy and consistency of the measurement device or structure, the accuracy and consistency of the elevation survey datum, and the diligence of the field or laboratory technician who collects or analyzes the data. Thus, some portion of the residual error between the field-measured data and the simulated output could be due to measurement error in the calibration target value.
- Data Management Errors. Errors can be introduced as a result of data management activities. Examples of data management errors include, but are not limited to, associating input data with an incorrect location (resulting in spatial errors), assigning time-series data incorrectly (resulting in temporal errors), or otherwise inputting values incorrectly. Thus, some portion of the residual between the field-measured data and the simulated output could also be due to data management errors.
- Conceptualization Errors. Errors can be introduced as a result of inadequately conceptualizing the field problem. The absence of important site information can lead to errors associated with assumptions made that are necessary to perform predictive simulations. Thus, some portion of the residual between the field-measured data and the simulated output could be due to conceptualization errors.

6.2.3 Scaling Effects

A numerical model uses discrete space to represent the hydrologic system. The Site 86 GFM grid was built in an effort to strike a balance between maximizing the number of grid blocks and minimizing the numerical burden and associated model run times. However, all numerical grids are subject to errors resulting from scaling effects.

Errors associated with scaling effects result when and where significant spatial heterogeneities in the field problem are not represented at the scale of the numerical grid blocks. For example, the height to which water rises in a nonpumping groundwater well is a transmissivity-weighted average of the head conditions adjacent to the well screen (Neville and Tonkin, 2004). Groundwater wells at the Site have variable-length well screens within a

highly complex, 3D flow system. Thus, a portion of the residual error between field-measured heads and the simulated output could be due to scaling effects resulting from the difference between model layer thicknesses and well-screen lengths of calibration target wells.

6.2.4 Interpolation Effects

Calibration target locations would ideally be represented in the Site 86 GFM to coincide with locations of the center of grid blocks, but in practice this is not possible. Thus, interpolation errors can be introduced in the calibration evaluation. Interpolation errors also result from spatially distributing point values of parameters or stresses over the model domain. In an effort to manage interpolation errors, one of the goals for selecting calibration target locations was to seek a relatively uniform spatial distribution of calibration targets over the model domain. Having a reasonable number of spatially distributed calibration targets and types of calibration targets (e.g., qualitative and quantitative) helps make model output more reliable over a wide range of conditions for the entire domain.

6.2.5 Numerical Errors

Errors associated with the way a model solves the governing flow equations, coupled with the assumptions in the governing equations being solved, are inherent in all numerical models. Numerical errors are also associated with the selection of convergence closure criteria by the user. User selection of convergence closure criteria is an iterative process during calibration that seeks to strike a balance between making calibration progress by completing as many simulations as possible within the project schedule and achieving adequate accuracy in the numerical solution. Selecting convergence closure criteria that are too low during initial stages of model calibration results in fewer simulations being completed because of longer run times and possible convergence problems. CH2M HILL minimized introduction of numerical errors by selecting convergence criteria that resulted in converged solutions that provided mass balances of flow.

SECTION 7

Works Cited

American Society for Testing and Materials. 1996a. *Standard Guide for Documenting a Ground-Water Flow Model Application.* D5718-95. Reapproved 2006.

American Society for Testing and Materials. 1996b. *Standard Guide for Calibrating a Ground-Water Flow Model Application*. D5981-96. Reapproved 2002.

Anderson, M.P., and W.W. Woessner. 1992. *Applied Groundwater Modeling; Simulation of Flow and Advective Transport*. Academic Press, Inc. San Diego, California. 381 pp.

Buscheck, T.E., and C.M. Alcantar, 1995. Regression Methods and Analytical Solutions to Demonstrate Intrinsic Bioremediation. In *Intrinsic Bioremediation*, ed. R.E. Hinchee, J.T. Wilson, and D.C. Downey, 109--116. Columbus, Ohio: Battelle Press.

Doherty, J. 2007. Addendum to the PEST Manual. January.

Doherty, J. 2004. PEST Model-Independent Parameter Estimation User Manual. Fifth Edition. July.

Freeze, R.A., and J.A. Cherry, 1979. *Groundwater*. Prentice-Hall, Inc. Englewood Cliffs, New Jersey 07632, 604 p.

Haggerty, R., C.F. Harvey, C.F. von Schwerin, and L.C. Meigs, 2004. "What controls the apparent timescale of solute mass transfer in aquifers and soils? A comparison of experimental results." *Water Resources Research*. Vol. 40 (W01510).

Harbaugh, A.W., E.R. Banta, M.C. Hill, and M.G. McDonald. 2000. MODFLOW-2000, The U.S. Geological Survey Modular Ground-Water Model – User Guide to Modularization Concepts and the Ground-Water Flow Process. USGS Open-File Report 00-92.

McDonald, M.G., and A.W. Harbaugh. 1988. *A Modular Three-Dimensional Finite-Difference Groundwater Flow Models*. USGS Techniques for Water-Resources Investigation. Book 6, Chapter A1.

Neville, C.J. and M.J. Tonkin. 2004. Modeling Multiaquifer Wells with MODFLOW. *Ground Water* 42, no. 6: 910-919.

Xu, M. and Y. Eckstein. 1995. Use of Weighted Least-Squares Method in Evaluation of the Relationship Between Dispersivity and Scale. *Journal of Ground Water*. Vol. 33, No. 6. pp. 905-908.

Zhang, Y. and R. Heathcote. 2003. An Improved Method for Estimation of Biodegradation Rate with Field Data. *Groundwater Monitoring and Remediation*, Vol. 23(3), pp. 112-116.

Zheng, C., and P.P. Wang. 1999. *MT3DMS: A Modular Three-Dimensional Multispecies Transport Model for Simulation of Advection, Dispersion, and Chemical Reactions of Contaminants in Groundwater Systems; Documentation and User's Guide*. Contract Report SERDP-99-1.